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Canadian Paper Men Convene in Montreal

F. G. Robinson, Vice-President of the Canadian International Paper Co., Is Elected President of Canadian Pulp and Paper Association At Annual Convention — Meetings Largely Attended and Unusually Interesting.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 26, 1940—The annual three-day Convention of the Canadian Pulp and Paper Association, which has been an active force in the pulp and paper industry for more than a quarter of a century, was brought to a conclusion here this evening. It proved to be perhaps the most successful, and certainly the most significant, in the history of the Association. As always, it was attended by practically every man of note in the industry in Canada, as well as by some visitors from the United States, between 200 and 300 delegates being present. Under the general supervision of the Secretary A. E. Cadman, a most informative and educational program had been arranged, including not only annual reports on all the various brands of the industry, but many papers on subjects of special interest to the delegates as well as papers on technical subjects presented at meetings of the Woodlands and Technical Sections—two highly representative and active subsidiaries.

The special significance of this particular convention was that, dominating all the proceedings, were first the feeling that the pulp and paper manufacturers of Canada had during the past year amply demonstrated what D. C. Everest, president of the American Pulp and Paper Association, described as "the vitality of self-government in industry"; secondly, the undoubted evidence on every hand of the feeling that the future progress of the industry lies not in unrestricted competition but in concerted efforts to further research, improve processes, utilize waste motion and waste effort, and widen markets by cutting down costs.

While the above were the dominating themes at the Convention, and the topic was much under discussion, and that had to do with the special problems arising out of war time conditions. There was general support for the principle already in practise of co-operating with publishers to prevent any undue rise in the price of newsprint, and there was general concurrence in a cautious policy towards expansion, whether that be in connection with adding to existing capacity of paper or of pulp mills. There is already ample capacity for any demands within sight for newsprint, but the situation is different in respect to chemical pulp. It was realized that while war might bring abnormal demands, European competition would be keener than ever after the war, and hasty expansion now might prove disastrous later.

A feature of the convention was the presentation, for the first time, of the Howard Smith medal to the junior member of the Association who contributes the best paper dealing with phases of the industry each year. The medal on this occasion was presented to T. W. Westlake, of the Provincial Paper Company, Thorold, Ont., for his paper on "Use of Sodium Aluminate in Paper Making. Harold Crabtree, president of the Howard Smith Paper Mills, made the presentation.

Elections of Officers

F. G. Robinson, vice-president of the Canadian International Paper Company was elected president of the association for the ensuing year, succeeding R. A. McInnis, who has held the position for the past four years.

V. H. Emory, of Fraser Companies, Ltd., was elected chairman of the Technical Section, for the ensuing year. He succeeds E. M. Little, of Anglo-Canadian Pulp and Paper Mills, Ltd., who automatically becomes ex-officio member of council for the next year. To fill the two rotating vacancies on council, Howard Hyman, of J. R. Booth, Ltd., and G. J. Jacques, of St. Lawrence Corporation, Ltd., were named. Present members of council who carry on are B. W. Scott, of Consolidated Paper Corporation, Ltd.; H. S. Spencer, of Howard Smith Paper Mills, Ltd.; I. H. Copeland, of Canadian International Paper Co. and E. D. Hyndman, of Anglo-Canadian Pulp and Paper Mills, Ltd.

L. A. Nix, of Bathhurst Power and Paper Company, was election chairman of the Woodlands Section for the ensuing year, succeeding V. E. Johnson, of Canadian International Paper Company. W. G. Wright, of Price Brothers and Company, Ltd., was named vice-chairman.

Selected to the three rotating vacancies on council of the Woodlands Section were Mr. Johnson, along with R. G. MacFarlane, of Fraser Companies, Ltd., and J. V. Perrin, of the Brown Company.

Continuing members are Mr. Nix, Mr. Wright, and

(Continued on page 18)

More Power Planned For Fox River Mills

Public Service Commission Permits Wisconsin-Michigan Power Co. To Acquire Union Falls Power Plant To Expand Service To Fox River Paper Mills — S. F. Shattuck Honored — Workers At Safety Neenah Schools.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 29, 1940—Right to acquire the Union Falls dam and hydro-electric plant of the Oconto River Power Company on the Oconto River at Oconto Falls, Wis., has been given the Wisconsin-Michigan Power Company. This decision was announced last week by the Wisconsin Public Service Commission, which affirmed a previous order over objections of the Oconto Electric Cooperative.

The utility company will use the plant to expand its generating facilities serving the Fox River Valley and other paper mill sections. The price paid was approximately $90,000.

When the order was first issued granting the sale, the cooperative asked a re-hearing on its bid to purchase the property, arguing that convenience and public necessity would be better served if it were allowed to acquire the plant. The commission held that "because the cooperative has not chosen to accept the responsibilities inherent in a public utility which would entitle is to exercise the power of eminent domain it cannot properly use the commission for the indirect purpose of wresting the Union Falls plant from the ownership of the applicant and capturing such plant for itself."

The crux of the argument was that the cooperative would become a customer of the Wisconsin Michigan Power Company, and contended it would have to pay higher rates for power than if operated on a cooperative basis.

Workers Attend Safety Schools

Approximately 800 workers in paper mills and other industries of Neenah and Menasha, Wis., turned out for the first of a series of Twin City safety schools held at the high school auditorium at Neenah Tuesday evening, January 23. The principal speaker was C. Wayland Brooks, attorney, of Chicago, whose subject was "Our Major Problem." He warned that government must stop condemning business and that business must cooperate with government. The Kimberly-Clark band entertained with a concert prior to the session.

Five sectional meetings were held prior to the general program, dealing with safety problems of specific groups. The electrical power group had as its chairman Earl Hill of the Gilbert Paper Company, and the speaker was Charles Harger, chief engineer of the Wisconsin Michigan Power Company. H. P. Thompson, Kimberly-Clark Corporation, was chairman of the materials handling group and the speaker was Dr. J. B. Mac Laren of Appleton, Wis. A sound slide film, "Handle with Care," was also presented. The "preparation of stock" group had John Michie, Gilbert Paper Company, as chairman, and the address was given by I. J. Stafford, superintendent of the Neenah Paper Company. In the printing machine hazards section, John Geiger of the Banta Publishing Company was chairman, and the speakers were Joe Conway of the Banta plant, and Richard Kerr and Joseph Schommer of the Northwestern Engraving and Electrotype Company. The "Personal feminine hygiene" group was addressed by Dr. Ronald B. Rogers, with Barbara Thom, Banta company, as chairman.

S. F. Shattuck Honored

S. F. Shattuck, vice-president of Kimberly-Clark Corporation, Neenah, Wis., was honored by the Neenah Boys Brigade at a banquet January 20 celebrating the fortieth anniversary of the organization. The audience of 300 was made up of numerous men from far and near who had belonged to the Brigade when boys. For 39 of the 40 years of the Brigade's existence, Mr. Shattuck has taken an active interest in it, and has been responsible for keeping it going and growing. The organization has its own building and gymnasium and a membership of 253. Leo O. Schubart, treasurer of the Neenah Paper Company, has been a leader of the organization for 21 years. Dan L. Kimberly was chairman of the "old boys" observance.

Sprinkler Checks Fire Damage

The sprinkler system of the Bergstrom Paper Company mill at Neenah, Wis., proved effective when an early morning fire started January 25 in the basement under the machine room. The blaze was extinguished before the city fire department arrived. The damage was negligible.

R. McC. Johnstone Forms Company

Robert McC. Johnstone is opening his own office and business on March 1, 1940, to be known as the Johnstone Engineering and Machine Company. The new company will design and manufacture a complete line of winders, unwinders, cutters, slitters and accessories for use in paper mills, finishing rooms and paper converters.

Mr. Johnstone may well be classed as a leader in the design of slitting and roll winding machines, as his experience covers twenty-three years in this one special line, having been chief-engineer and vice-president of the Cameron Machine Company, Brooklyn, N. Y., until his resignation in February, 1939. During these years numerous U. S. and foreign patents were granted to him. He has a wide acquaintance in the paper mill, paper converter, and paper specialty trades.

The program to be outlined for the first year will cover a complete line of slitting and winding machines up to and including 82 in. width. The designs will be made covering both score cut and shear cut slitters. Mr. Johnstone's experience indicates that each type has a specific use and the type of slitter which is best adapted to the customer's requirements will be furnished.

Final plans will not be completed until after the incorporation of the Johnstone Engineering and Machine Company during the early part of March.

Chicago Expects More Activity in Spring

Current Lag In Consumer Demand Expected By Midwest Paper Merchants To Become More Active By Early Spring—W. C. Ritchie To Erect $250,000 Addition—H. P. Smith To Have New Plant — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 29, 1940—The local paper market is finding demand comparatively much slower than it was a few weeks ago. There seems to be a tendency on the part of dealers to bow to a lessened consumer demand which means that goods are moving from the shelves more slowly. However, the price structure in all lines remains firm and there continues to be a persistent belief that demand will become more active at least by early spring. All lines report a continuation of inquiries indicative of interest and of a realization of the pulp situation both here and abroad. Waste papers were weaker during the week as supply was quite plentiful for the existent demand. Books and covers showed less demand than last week and sulphite bonds were reported as very quiet. Groundwoods were in fair demand and the newsprint market showed little change. Krafts were fairly strong though local reports showed less actual activity than for some weeks past.

W. C. Ritchie & Co. to Build $250,000 Addition

W. C. Ritchie & Co., 74-year old packaging firm and reported to be one of the largest of its kind in the country, will start work early in February on a $250,000 addition to the north of its plant at 8855 Baltimore Avenue in Chicago. The new three story unit will add 80,000 square feet of space to the plant which has 108,000 square feet. Part of the new building will be occupied by general offices and display rooms. The remainder will be used for the manufacture of paper boxes, fibre cans and transparent packages. The building will be of fireproof construction and cost about $250,000. Completion is set for the middle of June. Expanding sales have made increased facilities necessary according to officials of the firm making paper boxes, fibre cans and transparent packages.

H. P. Smith Paper Co. to Erect New Plant

The H. P. Smith Paper Company has recently broken ground for a new plant to be located on the southwest corner of La Vergne Avenue and West 69th street in the Clearing industrial district. The plant will be a one-story, daylight, continuous flow structure 200 by 246 feet in size.

No Drastic Waterway Restrictions Likely

Paper executives interested in the utilization of the Illinois waterway for the shipment of raw materials and finished products are finding some solace in early reports that the latest draft of the proposed St. Lawrence waterway treaty with Canada would not limit Chicago to the present diversion of 1500 cubic feet of water per second from Lake Michigan. If negotiated and ratified by the two governments, the President declared the new treaty will not include the rigorous restrictions on waterway diversion that former drafts have contained. Heretofore treaty makers have proposed that the new 1500 cubic feet provision, the limit set by the United States Supreme Court, be written into the treaty. To do this would, in the opinion of Chicago shippers, condemn the waterway forever to an inadequate flow insufficient either for sanitation or for satisfactory navigation. The hope here is that a provision be written in insuring a maximum diversion of 5000 cubic feet or Illinois should be guaranteed that suitable legislation to provide the increase be passed simultaneously with the ratification of the treaty itself.

No Special Car for Salesmen This Year

The midwest division of the Salesmens Association of the Paper Industry has decided to eliminate the "special car" method of going to the annual meetings of the National Paper Trade Association last month. Because some of the salesmen like to leave a little earlier or a little later, the private car idea was abandoned. However, it is felt that the attendance will be good this year as indicated by the advance interest shown by sales eexcutives locally.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 31, 1940—The Government Printing Office has received the following bids for 13,000 pounds (100,000 sheets) of 50 per cent rag, 20 x 25 blue antique cover paper; Mudge Paper Company, 9.59 cents; R. P. Andrews Paper Company, 9.65 cents; Whitaker Paper Company, 9.56 cents; Virginia Paper Company, 10.5 cents; Barton, Duer & Koch Paper Company, 9.7 cents; Stanford Paper Company, 9.9 cents; Walker, Goulard Plehn Company, 9.99 cents less 1%; Paper Corp. of U. S., 9.14 cents; and Mathers-Lamm Paper Company, 14 cents.

For 17,000 sheets of 20 x 25 blue gummed paper; Whitaker Paper Company, $9.39 per M sheets; Mudge Paper Company, $8.89; Mathers-Lamm Paper Company, $9.50; R. P. Andrews Paper Company, $9.22; and Nashua Gummed & Coated Paper Company, $9.90 less 2 per cent.

R. A. Carlin with Am. Industrial Co.

Roy A. Carlin is now with the American Industrial Company of Buffalo, N. Y., as chief chemist.

Mr. Carlin was formerly with the Carlin Chemical Company, analytical chemists who had done considerable research work for the American Industrial Company in connection with de-inking. Mr. Carlin, it is said, became so enthused in the work he was doing for the American Industrial Company in the way of reclamation of waste paper and other research work in the pulp and paper industries he decided to join the organization.

Obituary

H. J. McKane

Hugh J. McKane, manager of the New Orleans office of Stein, Hall Manufacturing Company, Chicago, and well known in the Southern paper industry, was killed on January 18 when his car crashed into a freight train in a heavy snowstorm at Ruston, La.

While driving alone on an icy pavement through the outskirts of Camden, Ark., Mr. McKane was so blinded by the snow that he failed to see a railroad crossing over which the train was passing. His skull and chest were badly fractured and his car was completely demolished. He was taken to the Ruston-Lincoln hospital, but emergency measures were unavailing.

The body was taken to Milwaukee, Mr. McKane's former home, where the funeral was held. A number of his Stein, Hall associates attended the services and several acted as pallbearers.

Mr. McKane would have been 56 years of age on February 21. He joined Stein-Hall 28 years ago after handling its St. Louis accounts as a broker. He opened the St. Louis office and later became sales manager in Chicago, opened the Detroit office, traveled out of the New York headquarters of Stein, Hall & Company, Inc., and then returned to the Chicago company to cover the Southern territory. As manager of the New Orleans office he covered a territory extending about 2,000 miles East and West and as far North as Memphis.

Mr. McKane is survived by his widow; three sons, Gordon, John and Hugh McKane Jr.; a daughter, Miss Gloria McKane; three sisters, Mrs. G. B. Geering, Miss Marian McKane and Mrs. Rosetta Murray, and a brother, John J. McKane.

George C. Andrew

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 29, 1940—George Clapp Andrew, for many years vice-president and sales manager of the Monadnock Paper Mills, Bennington, N. H., with offices at 201 Devonshire street, this city, well and favorably known, died January 24 in his 72nd year at his residence, 28 Marlboro street, after a long illness.

Born in Dorchester, Mass., Mr. Andrew entered the paper manufacturing business at the plant of Tileston & Hollingsworth, Hyde Park, Mass. In 1907 he joined the Monadnock Paper Mills, with which he was associated for 32 years.

His widow, Mrs. Annie B. Andrew; a son, Sumner B. Andrew, and three grandchildren are living.

Howard J. Reilly

Howard J. Reilly, 39, Eastern Division Manager of Graham Paper Company, Brooklyn, N. Y., was killed Friday, January 19, when the automobile in which he was riding crashed head on during a severe snow storm. Brooklyn police said that the drivers of both cars had been temporarily blinded by the snow.

The driver of the car, John Penton, thirty-six years old, also a Graham Paper Company salesman, suffered lacerations of the forehead and contusions of the leg.

Howard Reilly was widely known among the paper jobbers on the east coast. Curtis R. Georg, who has worked shoulder to shoulder with Howard Reilly for six years will take over the management of Graham's Eastern Division.

Charles A. Babcock

[FROM OUR REGULAR CORRESPONDENT]

Funeral services for Charles A. Babcock, president and treasurer of the Wisconsin River Paper and Pulp Company, were held Sunday afternoon, January 21, at the home at Neenah, Wis. They were conducted by the Rev. A. A. Chambers, rector of St. Thomas Episcopal Church. Burial was made in Oak Hill cemetery at Neenah. The services were attended by large numbers in the paper manufacturing fraternity, with which Mr. Babcock had been associated for nearly half a century. Bearers were John R. and James H. Kimberly, Donald Turner, Ernst Mahler, George Sensenbrenner, T. M. Gilbert, Lee Joannes and Mowry Smith.

Gerhard T. Kamps

Gerhard T. Kamps of Appleton, Wis., who had been auditor for the John Strange Paper Company, Menasha, Wis., for 21 years, died Thursday, January 25. He suffered a heart attack on a street corner at 8 o'clock in the morning while on his way to board a bus to take him to work. He is survived by his widow, five sons and five daughters. Funeral services were held at St. Joseph's Catholic church at Appleton Monday morning, January 29, and burial was made in the parish cemetery.

William H. Croft

[FROM OUR REGULAR CORRESPONDENT]

TURNERS FALLS, Mass., January 29, 1940—William H. Croft, 63, vice-president and superintendent of production of the Esleeck Manufacturing Company here, died suddenly January 26 at his home on Maple street. He had been connected with the Esleeck firm since 1913 and was a director of the First National Bank & Trust Company of Greenfield. He also was a member of the Greenfield Business Men's Club, Country Club and Elks. He leaves his widow and a daughter.

Col. Arthur F. Townsend

Col. Arthur Farragut Townsend, Chairman of the Board of Raybestos-Manhattan, Inc., and General Manager of The Manhattan Rubber Manufacturing Division, Passaic, N. J., died January 14, at his residence, 298 Greenway Road, Ridgewood, N. J., at the age of 74. He had been suffering with a heart illness since last April.

A graduate of the Massachusetts Institute of Technology, Col. Townsend with Frank Cazenove Jones, W. W. Dashiell, Peter Reid, Samuel J. Watson and George Woffenden, organized The Manhattan Rubber Mfg. Company in 1893, was successively Secretary and Vice-President, and succeeded Mr. Jones as president ten years later. From 1903 until 1929, when Raybestos-Manhattan, Inc., was organized, he was president of Manhattan Rubber. Since 1929 he had been chairman of the board of Raybestos-Manhattan, Inc., and general manager of the Manhattan Rubber Division.

The Meyers Consistency Controller and Volumetric Stock Meter

By S. E. Meyers, Chief Engineer[1]

The new Meyers Consistency Controller follows, in an evolutionary manner, two earlier conceptions introduced to the industry in 1930 and 1935. Many of these are still operating successfully, especially the earlier one. It was inevitable, however, that the exacting demands of the industry would call for still further improvement in adaptability, accuracy, and reliability.

In common with the earlier designs, the new machine uses an agitator revolving in the stock, the varying torque due to density variations furnishing the impulse for actuating the responsive elements. Many cases have shown that for pre-paper machine or pre-jordan installations the agitator can be depended upon to mix the regulating water as well as interpret density variations. However, the agitator blade design has been improved and the rotative speed reduced. True agitation, as a matter of mixing, per se, is the arch enemy of accurate viscosity determinations; therefore an optimum set of conditions must be established in which, as a matter of mechanical simplicity, the requirement of accurate "feeling" and thorough mixing are realized. The stuff-box which is furnished with the machine is basically similar to those furnished with the earlier models except that the introduction of regulating water is novel in that it flows into the stock between the walls of a double partition, forming an inverted weir, and without the use of submerged piping.

The Operating Elements

Fig. 1 shows a perspective view of the operating elements as assembled for the standard controllers. Note that the motor axis is vertical and in line with the agitator shaft. Referring to Fig. 2 which shows the details of the motor mounting, it will be seen that it is carried by a ball bearing which supports its entire weight at the bottom and by a steady arm with a pointed "center" at the top. The agitator shaft is attached to the lower extremity of the bearing shaft. The motor frame and gear reduction are integral, and the arrangement provides one which is extremely simple and virtually frictionless. Under the influence of resistance to rotation of the agitator in the stock, the entire motor frame tends to turn *counter* to agitator rotation. In other words, if the agitator shaft were held stationary, the motor frame would revolve, if free, in the opposite direction at agitator speed.

[1] Process Controls, Inc., Le Roy, N. Y.

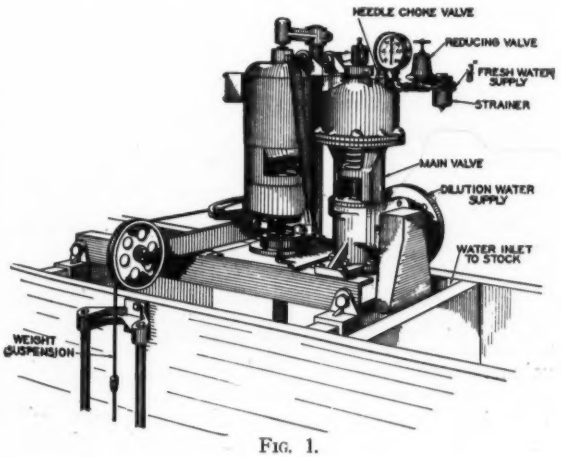


FIG. 1.

Referring again to Fig. 1, free rotation of the motor frame is prevented by a cable, one end of which is attached to the motor frame through a grooved concentric segment attached thereto, passes over a sheave having anti-friction bearings, and terminates in a fixture adapted to carrying counterweights. Ideally, then, the agitator torque and weight suspension are in balance, and the system is statically stable. But as varying densities are constantly being encountered, the torque overcomes or is overcome by the counterweights and the motor frame turns slightly one way or the other in response. An arm secured to the lower portion of the motor frame transmits motion through a suitable link to the lower end of a lever which imparts movement to the pilot valve rocker shaft, Fig. 3. The pilot valve governs the movements and positioning of the main dilution valve located adjacent to the motor as shown in Fig. 1.

The Dilution Valve

A section through the dilution valve is shown by Fig. 3. Its construction is such that its response to the most minute density variation is instantly and vigorously forthcoming. The valve structure itself is not new as far as its main elements are concerned, but its most salient feature lies in the unique and rugged, but extremely sensitive pilot valve arrangement. A small supply of clean water at 15 lbs. pressure is admitted constantly through a small orifice to the space surrounding the bellows. When the pilot valve is at its highest position (unseated) the water freely escapes upward through the pilot valve body and the bellows is under no pressure. But as the pilot valve lowers under the influence of a heavier agitator torque due to heavier stock, the bellows water cannot escape. This causes an increase in pressure of the water surrounding the bellows which begins to descend to open the main valve at the bottom. Likewise should the main valve previously have been open, raising the pilot valve from its seat decreases bellows water pressure and the main valve rises to close by virtue of spring compression.

The heart of the idea surrounding this pilot valve, see Fig. 2, lies in the fact that its movement *relative* to the pilot valve body is very small because the valve stem movement is limited between its seat and the bottom of the screw in the yoke at its upper end. This means that the swing of the motor cannot get "out of step" with valve action at any time. The

motor attempts to seek new positions continually, but it cannot do so until the main valve has taken its instantaneous position corresponding to the motor position at the moment. Suppose a slug of very heavy stock should pass into the box. The tendency is for the motor to swing to an extreme position. It cannot do this because its swing is stopped by the seating of the pilot valve. But at this point, the main valve begins to descend carrying the entire pilot valve with it, and the motor can then follow up at exactly the same rate that the main valve opens. Should the consistency suddenly decrease, the motor will begin to turn back under the influence of the counterweights, but it cannot return more quickly than the main valve will allow because the upward movement of the pilot valve is constrained under the screw with which its upper end is in contact.

An Ideal Arrangement

This combination of elements comprises an ideal anti-hunting arrangement which makes it impossible for the motor movements and valve responses to get out of step as is so often found, especially where varying rates of stock flow are met with. Nor are dash-pots or other damping devices necessary. There is always an optimum velocity of valve action which is dependent upon the speed of density changes, duration of stock in the agitator chamber and the

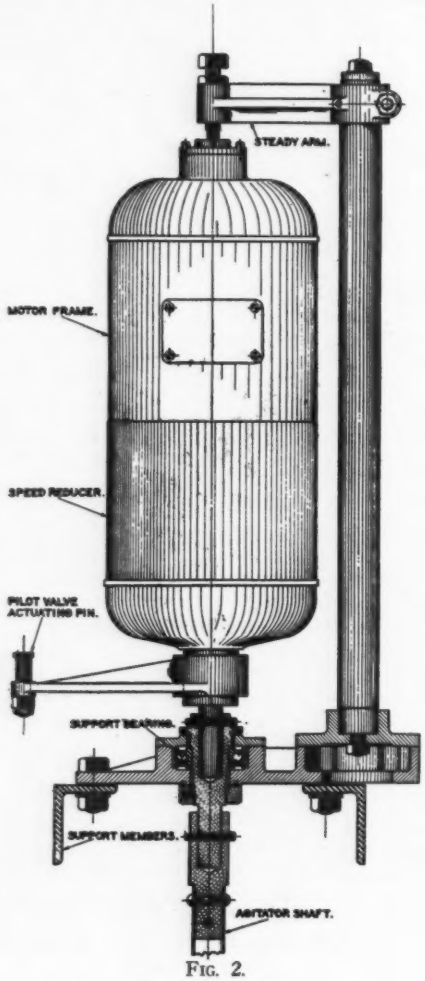


FIG. 2.

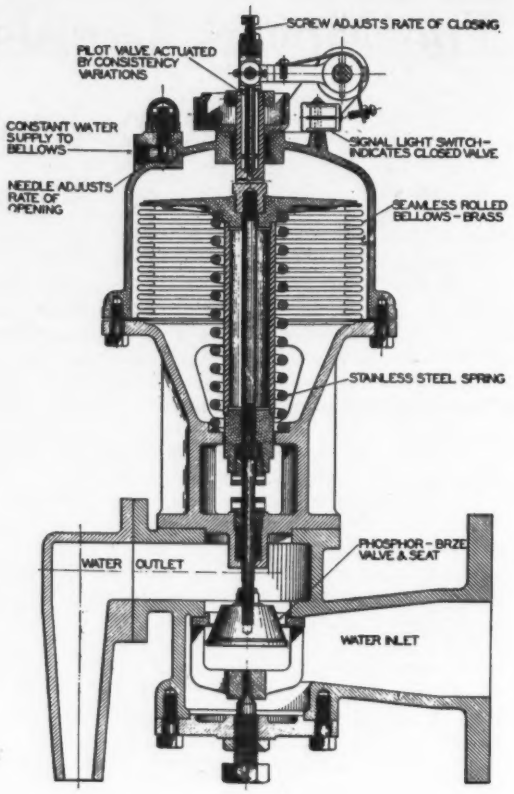

SCREW ADJUSTS RATE OF CLOSING
PILOT VALVE ACTUATED BY CONSISTENCY VARIATIONS
CONSTANT WATER SUPPLY TO BELLOWS
SIGNAL LIGHT SWITCH - INDICATES CLOSED VALVE
NEEDLE ADJUSTS RATE OF OPENING
SEAMLESS ROLLED BELLOWS - BRASS
STAINLESS STEEL SPRING
PHOSPHOR - BRZE VALVE & SEAT
WATER OUTLET
WATER INLET

FIG. 3.

degree of the variations. But under any set of circumstances, the velocity of valve response can be set by adjusting the choke valve which admits water to the bellows chamber. Choking this valve down, slows the rate of main valve opening, and vice versa. Screwing down the adjustment on top of the pilot valve slows the rate of main valve closure. Thus any speed of valve action may be obtained to suit the job, but under no circumstances can the motor and valve set up oscillations out of step with each other, commonly known as "hunting."

The new Meyers Consistency Controller is applicable at any point in the mill where regulation is needed. It will handle any type of stock or mixed stocks between 2½ and 6½ per cent. Pre-paper machine and pre-refiner installations continue to dominate mill applications, but the regulation of slush stock prior to beaters, regulation ahead of screens and knotters by adding secondary diluting water after regulation, the control of save-all stocks, and stocks from vacuum washers are rapidly gaining much attention.

Stock Metering

Turning now to the subject of stock metering: by the term "metering" is meant the precise and automatic measurement of the consistency and volume of stock in transit from which accurate dry weights can be determined, an automatic recording of the meter activities, and a unit which will deliver measured volumes (weights) at a rate corresponding to the rate of usage by subsequent processes.

In 1935 an important Canadian newsprint mill called in the writer relative to the metering of slush

sulphite stock which was being purchased by a neighboring mill. The problem was how to determine beyond question the actual dry weight delivered for purposes of accounting and invoicing. Needless to say, accuracy was the gist of the entire problem. In the summer of 1935 the writer conceived and designed a meter which was approved by the mill managements and it was placed in service about Thanksgiving Day of that year. The unit has operated continuously since, and there has never been a dispute between the selling and receiving organizations as to delivered weights. Further, it is understood that maintenance has been exceedingly small even though tens of thousands of cycles have been completed. Since then three Meyers type meters built by a Canadian builder have been installed in another large Canadian mill. These meters are equipped with pneumatically operated stock valves. However, air operation is expensive in that a substantial compressor must be installed if the plant has no reliable and sufficiently large air supply, and air consumption is relatively high.

Meters for All Capacities

With the experience gained from observation of these meters, a line of meters for all capacities has been developed which are motor operated, the largest requiring not over 1½ horsepower connected load, but averaging about ½ horsepower energy consumption. Its operation will cost but a very small fraction of the air operated meters. However, the new types are well adapted to pneumatic or hydraulic operation if desired.

Referring to Fig. 4, it will be observed that the arrangement consists of a tank or wood vat of calibrated capacity suitably located with respect to subsequent processing operations. At a point above the meter tank a density controller having an accuracy swing not over .1 per cent plus or minus average is located. Stock from a manually set stuff-gate is discharged into a valve chamber and passes through this valve, when open, into the lower metering tank. When the stock has reached a given level (within plus or minus .1 inch) the upper valve closes and the lower one opens to discharge the measured contents. As soon as the tank is empty, the valves reverse, the top one opening and the bottom one closing for the next cycle. The operating valve gear is ingenious in that one driving motor handles both of them, but it is impossible to by-pass stock by both valves being open simultaneously. The entire gear is rotating or oscillatory, thus making for long life and freedom from undue wear. With reference to Fig. 4 note that the driving crank is on the lower quarter and both valves are closed. The crank turns counterclockwise. The next quarter turn operating through the bell crank opens the upper valve. The following quarter (approximately) turn closes the upper valve. As the crank revolves through the third quarter, the outer end of the bell crank becomes a fulcrum with the upper valve as its support. Thus the knee of the bell crank rises carrying the lower valve upward to open it. The fourth quarter turn reseats the lower valve, which in turn becomes the support for the bell crank knee which has now become the fulcrum. The linkage is supported by one valve or the other being seated; therefore they cannot both be open at once.

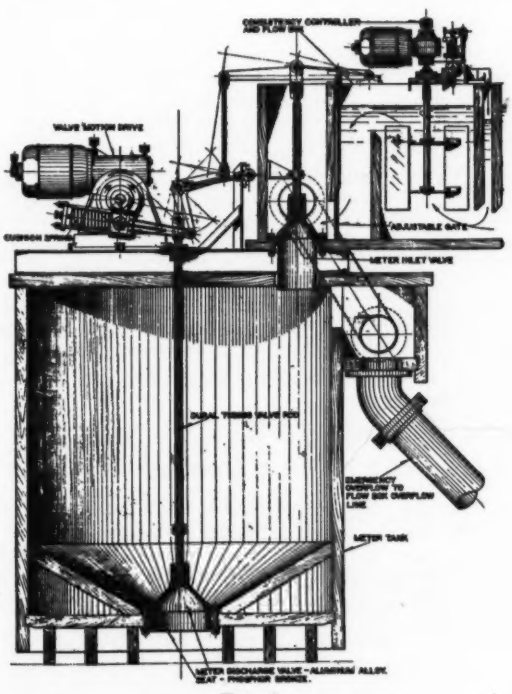


FIG. 4.

In operation when the stock has reached the set level and the crank is at rest at the inner dead center, contact under control of stock level is made and the crank makes one-half revolution closing the upper valve and opening the lower one. Here the motor pauses under control of a time-set switch for sufficient time to empty the tank. This varies depending on design constants between 5 and 15 seconds. At the end of the "dumping" period, the crank makes another half revolution closing the lower valve and opening the upper one. Where greater continuity of flow is advisable, the tank is arranged with a center partition so that each side fills and empties alternately. However, in this case, but one driving motor is still required having cranks set at 180 deg. apart at each side of the worm case. Normally the tanks are so proportioned as to fill in two minutes and the entire cycle normally completes in 2¼ minutes. Faster operation is thoroughly practical and the unit will handle heavy overloads without difficulty. About .4 CFM of compressed air is used as a level determinator and to operate the cycle starting switch. The equipment is controlled in every phase of operation from an enclosed panel carrying the electrical contactors, relays and timing adjustments.

Provides Certain and Accurate Knowledge

The Meyers stock meter installed in a mill manufacturing and using its own pulp provides accurate and certain knowledge of the weight of stock delivered by the pulp mill and used by the paper mill. It affords direct evidence as to yield from the unworked pulpwood; it unerringly gives an accurate value of "shrinkage" between pulp received and actually made into salable sheet in the paper mill. For those pulp mills which sell their output to the market, the meter readings give an accurate figure as to stock actually delivered to the wet machines or presses to the end that an accurate running check is available regardless of the usual determinations by moisture sampling from wet laps or otherwise. Under whatever conditions the meter is installed, its cycle recording instrument will give (a) the total volume

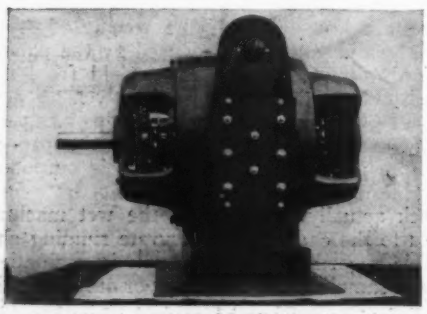
(weight) of stock since the last reading, (b) the rate at which stock was passed at any hour of the day or night, (c) a visual record of unusual demands, delays or other circumstances departing from routine operation. It will deliver volumetrically measured stock of consistency not varying more than .1 per cent plus or minus any density which can be set between 2½ and 6½ per cent. It will handle half-stuff as well as refined and is therefore valuable as a control medium from brown stock chests or entering or leaving any type of refining equipment. And as already mentioned, the normal slight inaccuracies of density and liquid level within the meter tank so balance each other in short periods that accurate tallying may be obtained at will.

In discussing the operating phases of the meter, it is well to mention that the control panel includes an automatic contact which prevents discharge of the meter until the receiving chest can accommodate the contents without flooding and stock loss. Also the meter may be operated by hand for any emergency, but such operation will be shown on the recorder. These units are built to handle any type of stock within the densities given above and without limitation as to capacity. However, in some instances, and especially where the load may vary considerably, it is advisable to install two identical units in parallel.

New Kato Engineering Co. Motor

Manufacturers located in DC powered areas face a perplexing problem when they require machine shop equipment that demands alternating current. The Kato Engineering Company, Mankato, Minn., have designed a line of direct current motors, which in addition to driving a piece of equipment also furnish 60 cycle AC current for the operation of an auxiliary function. For instance, spot welding transformers require alternating current. Where spot welding transformers are used in direct current areas, it is necessary to secure an alternating current supply. The Kato line of special direct current motors will solve this problem efficiently and at low cost.

There are various types of equipment which require alternating current. Among these is the use of low voltage current for the operation of relays and controls, on machine tools and processing machinery; synchronous motors as used on time cycle equipment and the operation of fluorescent type lamps. In fact, wherever an AC current is required, the use of Katolight DC motor with AC current take-off, will solve the problem efficiently and economically.



60-Cycle AC Current from a DC Motor.

Indianapolis Looks for Good Spring

[From our regular correspondent]

Indianapolis, Ind., January 29, 1940—Bitter cold weather during the last week continued to hamper the paper trade in this section, but volume seemed to hold the advances it made after the first of the year. There is continued optimism on the part of most of the trade and all are confidently looking for a good spring season. Most of the state roads have been cleared of snow and the coming week should see less difficulty in delivering orders, most of which now go by truck.

The container and paper box trade has been particularly handicapped by icy roads, but thus far truck losses have been light. Time schedules, however, have been delayed materially. The local container and box factories are working at nearly production and inquiries indicate a good business, once the weather breaks. Prices are being firmly held and there is no present outlook for any change. Some executives say inquiries are coming from box users which have been rather poor customers for some time, indicating a broadening of the market.

While demand for building paper and roofing continues light there are inquiries from the retail trade and some buying is being done. Most of it is to balance retail stocks and as yet the retail trade has not begun to prepare for spring trade, which promises to be very heavy. It is doubtful if any heavy deliveries will begin before March 1 after the retailers have made out their tax assessment sheets.

Fine paper demand showed little change last week. County contracts for printing continue to be awarded, giving jobbers some idea of who will get most of the public business for the first half of the year. Covers, ledgers and bonds are having a fair sale, but the volume is not as heavy as had been expected. Tissues and wrapping paper and bags have suffered somewhat because of weather conditions, but prices are being held firmly.

Demand for most grades of rags and waste paper continues only fair. Better grades of rags are firm. No particular change was seen in paper prices.

Purchases Under Walsh-Healey Act

[From our regular correspondent]

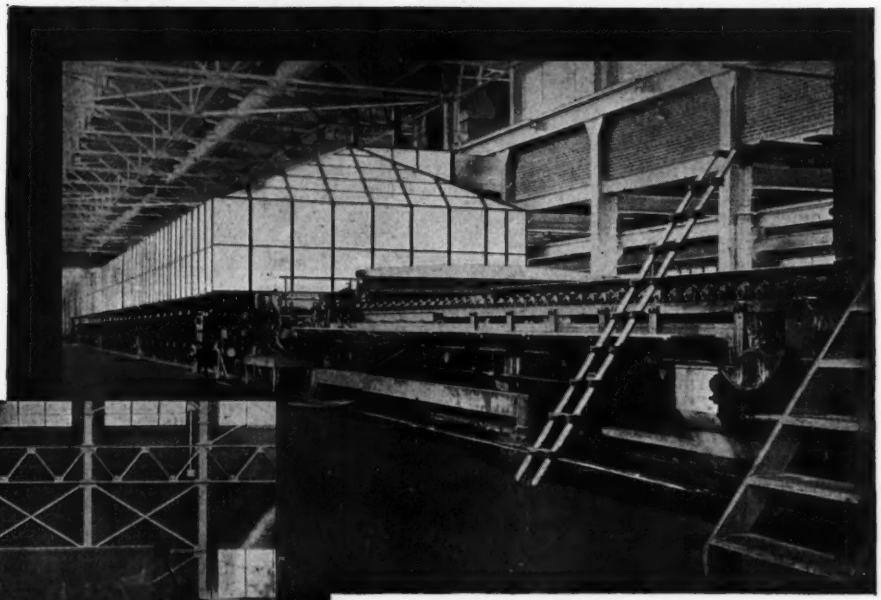
Washington, D. C., January 31, 1940—Labor Department has issued a compilation of government purchases under the Walsh-Healey Act from the time the Act went into effect from September 1936 through 1939.

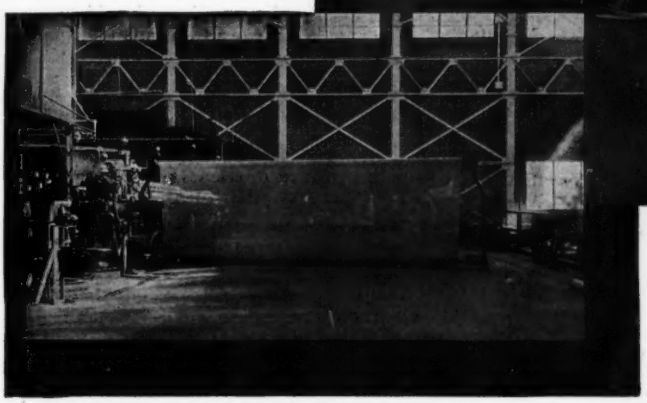
The tabulation shows that during that period 461 paper and allied products contracts were let, totaling approximately $30,000,000 which was 1.93 per cent of all the contracts.

Penn State to Hold Dinner Paper Week

A luncheon of interest to all Penn State men connected with the pulp and paper industry will be held Wednesday, February 21, 1940, in the Florentine Room, Hotel Lexington, New York City. The luncheon will be sponsored by the Penn State men of the New York area. James W. Towsen, personnel director, West Virginia Pulp and Paper Company, 230 Park avenue, New York, N. Y., is in charge of arrangements. All Penn State men are welcome.

THE BELOIT *Removable Fourdrinier*





● Wire is strung in aisle while machine is in operation, if desired.

● Fourdrinier pit can be washed out while wire is being installed.

● Wire bundle is taken from shipping box and mounted directly in carriage—no chucks to apply—no further handling as bundle is unreeled as carriage moves along to form wire loop.

● All wire poles are mounted in carriage before loop is formed. Inside poles are inserted inside the wire.

● Safest — most convenient — quickest method of installing Fourdrinier wire.

THE BELOIT WAY BELOIT IRON WORKS PAPER MACHY BELOIT, WIS. U.S.A. IS THE MODERN WAY

CANADIAN PAPER MEN MEET IN MONTREAL

(Continued from page 9)

F. Faure, of Consolidated Paper Corporation, Ltd.; E. B. McGraw, The Ontario Paper Company, Ltd.; G. W. Phipps, Spruce Falls Power and Paper Company, Ltd., and H. G. Schanche, Abitibi Power and Paper Company, Ltd.

The President's Address

In his opening address at the annual general meeting of the Association, R. A. McInnis, president, said that when the association was formed in 1913, the production of pulp and paper in this country was only about 400,000 tons, whereas in 1939, the production of pulp and paper products was about 4,300,000 tons, of which newsprint was only 2,900,000, and other products were 1,400,000 tons, made up of 700,000 tons of paper and board and 700,000 tons of surplus pulp exported.

"Today pulp and paper is a major industry in Canada," he said, "and because its operations extend from Nova Scotia to British Columbia, and is an important industry in six Provinces of this Dominion, it is obvious that the people of Canada are quickly and materially affected by the prosperity or otherwise of this industry."

In concluding his splendid address Mr. McInnis said:

"I have tried to make it clear that we must more thoroughly co-ordinate our activities, face our problems, and with that knowledge, and adequate organization, determine our activities.

"If we will realize and appreciate this necessity, there can hardly be any doubt of our ability to take advantage of the many opportunities that I am convinced the future presents us with.

"My idea of their extent may be wrong, and the particular direction we take may be different, but I am sure that in degree at least we have those opportunities which have been reviewed here."

Address by the President of the American Association

D. C. Everest, president of the American Pulp and Paper Association, in addressing a joint luncheon of the Technical and Woodlands Sections, expressed the opinion that if the war is of long duration considerable expansion of pulp production in Canada might be expected, but he warned that a desperate bid by Europeans to regain trade after the war might wreck the market.

"Following the war," he said, "the pulp manufacturing countries of Europe will be under extreme pressure to develop export trade. Their currencies are likely to feel the effects of war drain, and pulp consumption throughout the world may require a considerable period of time to build up to a normal level. We may face then most intense competition, low pulp prices and chaotic market conditions. It is not difficult to imagine that losses during that period will more than offset gains during the war period."

Explaining that the war had interrupted the flow of pulp to consuming mills in the United States, he proceeded: "Additional costs of transportation, insurance and of overseas operations have already increased delivered costs. The invasion of Finland raises the question as to whether any Finnish pulp will be available in the immediate future. Certainly, the flow of pulp from Germany and Central European manufacturers can hardly be expected as long as the British export blockade continues. In all, perhaps as much as one-third of the world export of wood pulp will be out of the market for the duration and this is bound to have a marked effect upon supplies."

He indicated the possibility of far-reaching changes not only in world distribution of wood pulp as a result of the war but also of technical development. He pointed out how the development of kraft paper consumption had been influenced by the last war and how in 1937 restriction of wood pulp supply had caused development and use of bleached sulphate pulp, and said it was reasonable to expect that under present conditions new processes and the use of new kinds of wood would again be encouraged.

"In fact," he said, "the expansion of the boundaries in pulp manufacture are likely to include the whole field of wood utilization and particularly the development of by-products from pulp manufacture, which will have a profound influence upon the fundamental economic structure of the pulp industry. Here are a group of problems which rest upon the shoulders of our technologists and our foresters."

Declaring that the pulp and paper men of Canada were progressively welding into the industrial history of North America new principles, new concepts, which illustrated amply the vitality of self-government in industry, he said he was optimistic concerning the future, but added, "I want to re-emphasize the fact that my optimism is contingent upon the action of the industry itself. It is possible, if demands do not pile up too much, for the industry to exert strong measures of control, designed on the one hand to meet the demands of the moment and on the other hand to prevent the accumulation of new excess capacity which may have no market when the war is over. The control, as in most cases, is in price, and here wisdom is needed on the part of each individual company to handle its price problems so that a disastrous situation does not develop."

He noted that the responsibility was not wholly upon management but rested in large part on labor.

"Any broad effort by labor to hurry wage rate increases, to obtain a larger share of income before conditions of trade and values justify, is bound to increase costs," he asserted. "It might prove to be the one thing that would trip the flood gates to a market condition such as that of the last war.

"The relation between labor and capital must be more flexible than ever before. They are both in the same boat. Whatever goes up must come down—and promptly, if we are to save our economic position and thereby maintain jobs for those dependent on this industry."

Principal of McGill University

Much interest attached to the presence, as the guest speaker, at Thursday's joint luncheon, of Dr. F. Cyril James, Principal of McGill University, from the fact that Dr. James has only recently been appointed head of the University and from the further fact that McGill University has for years worked

in close association with the association in research work for furthering the interests of the pulp and paper industry. The members, naturally, were gratified to hear from Dr. James's eloquent address that he not only fully appreciated the high importance of the industry in the country's economic structure, but to discover that, from the many developments that have come from the utilization of wood pulp, he regards it as "one of the most significant types of business activity in the world today." He devoted most of his address to the importance of scientific research, and highly lauded the work of the Pulp and Paper Research Institute in support of which the Pulp and Paper Association, McGill University and the Canadian Government co-operate.

"Much has already been accomplished by this Institute," he said, "but I do not think that we have reached the limit of our achievement. By setting up a unified control within the Institute, providing a more adequate budget under the discretionary control of the Director, and co-ordinating more fully the various activities that are now carried on, it should be possible for us to achieve even greater heights." He added that McGill University was eager to play its part in the work of research—"an endeavor that is pregnant with so much benefit for Canada and all the world."

The Southern Pulp and Paper Industry

More than ordinary interest attached to a paper by Frank Heyward, Jr., general manager of the Southern Pulpwood Conservation Association on "The Trend of Forest Conservation in the Southern Pulpwood Industry," members being anxious for first-hand information regarding the future potentialities of the pulp and paper industry in the Southern states. Arrangement for the preparation of this paper were made through a Joint Committee of the American Pulpwood Association and the Woodlands Section of the Canadian Pulp and Paper Association, and in that connection the paper represented the contribution of the American group of the International Committee.

Mr. Heyward said that although the paper industry in the South dated back to the establishment of a paper mill at Williamsburg, Virginia, in 1744, and the first successful attempt to manufacture paper from southern pine occurred as far back as 1878 near Atlanta, Ga., the finished product of the few scattered mills in the South, until a short time ago, was kraft paper, the experts considering that southern pines were only suitable for this type of product. This period of somnolence continued until 1931, when Dr. Charles Herty claimed to be able to demontrate that the possibility of processing all species of southern pines in addition to dozens of species of indigenous hardwoods into various grades of white paper were unlimited. The foundation of his prediction was the rapid growth of native trees and the low manufacturing costs in the South. Only time, said Mr. Heyward, could reveal the correctness or otherwise of Dr. Herty's statements and predictions. Nevertheless, it was highly significant that the South's first newsprint mill, located at Lufkin, Texas, was nearing final stages of completion.

Mr. Heyward proceeded to deal at length with the timber resources of the South, and summing up his conclusions in this respect, he said:

"The idea of a 15 year rotation in the South for pulpwood is a myth. It is true that in the majority of plantations a first thinning for pulpwood will be entirely possible about the fifteenth year; but generally speaking no typical industrial operation will be able to make a harvest cutting for pulpwood in a natural stand in less than 20 to 25 years from seed. A cutting at this age would probably not be in accordance with the best forest practice, the stand being from 5 to 10 years too young if trees between 8 and 10 inches in diameter are desired. The often quoted growth figure of 1 cord per acre per year is arrived at much more readily on paper than in the field. As a matter of fact the mean annual growth for the pine region as computed for the deep South by the Forest Survey was three-tenths cord per acre.

"Due to severe competition for stumpage, in a number of localities the growing stock is being depleted much more rapidly than it is being renewed through growth. Thus, the entire state of Florida shows, according to Forest Survey data, an annual drain in 1936 of 2,400,000 cords of pine timber as compared with an increment of only 1,200,000 cords. In other words the drain on Florida's pine timber in cords is almost exactly double the net annual increment. This condition of over-drain existed even prior to the time when pulp mills were drawing heavily on the timber supply. It is, therefore, clear that, although the South as a whole has brilliant possibilities as regards timber production in the future, its present timber supply should be utilized with care, especially within the all too many sections where drain already exceeds increment."

Lignin Now a Valuable By-Product

In the chemistry of pulp manufacture the substance known as lignin, long one of the most difficult and baffling problems with which the experts have had to deal, has attained first-rank importance since its chemical composition became known a little more than a year ago. Dr. H. Hibbert, of McGill University, who last year announced this discovery as a result of 14 years of experiment, delivered an address on the subject which envisioned revolutionary changes through the commercial exploitation of lignin. He said that as it could now be chemically altered to make a number of different compounds, pulp and paper mills, which formerly wasted 500,000 tons of lignin annually, would soon have a very valuable by-product. Among the uses to which lignin might now be put he mentioned materials used in the manufacture of motor cars, mouldings of the type now made by bakelite, many household fittings and even complete moulded houses. Products already manufactured from lignin, he said, include artificial vanilla, which supplies almost all of Canada's requirements and wall panelling of ebony hardness. A special plant for the larger manufacture of this panelling is being erected on the Gatineau river in Quebec by the Masonite Company.

Effect of War Conditions

Paul Kellogg, of Stevenson & Kellogg Ltd., speaking on "The Effect of War Conditions on the Pulp and Paper Industry," said he thought that under present conditions it was reasonable to expect an increase in pulp shipments, largely sulphite, to the United States of from 200,000 tons up annually, the top limit being only the capacity of Canadian pulp

manufacturing plants. This capacity he strongly suspected might grow. It also seemed to him probable that Canadian newsprint exports to the United States might increase 10 per cent over 1939, and possibly considerably more, depending on the exact interplay of various influences. He pointed out the need for caution, however, for owing to Scandinavian competition Canada takes "the swing" in American demand for pulp and also to a lesser extent "the swing" in the American demand for newsprint because of the lower prices Scandinavian manufacturers can set, the pulp business, in Canada, on "swings," had risen to greater heights and sunk to lower depths even more than had the newsprint industry. It also took the swings in demand for newsprint, but the shipments of newsprint were so much greater than the European shipments that the effect of the swings was not nearly so violent as in the pulp industry. Under these circumstances he warned against the danger of being caught after the war with large inventories or in the midst of uneconomic expansion.

Hopeful of Victory Over Sawfly Pest

"For the first time since the campaign against the European spruce sawfly was started, we can discuss the parasite situation in a somewhat more optimistic vein," was the cheering news brought to the delegates by A. B. Baird, of the Dominion Parasite Laboratory at Belleville, Ont.

He said two species of parasites imported to Canada and now naturalized have greatly increased in population and one species particularly has "in some areas destroyed millions of the sawfly pest giving us reason to hope that our great spruce forests may yet be spared the disaster that appeared imminent in 1932."

"It would of course be folly to think the victory was won," Mr. Baird added, "but it gives us encouragement to press forward the attack with renewed vigor."

While the results of parasite introduction in the fight against the sawfly so far have been more rapid than first expected "we do not wish to give the impression that we consider the job finished," he said. "I would like to emphasize this point."

More than 200,000,000 parasites were released in the forests of five Canadian provinces last year to combat the pest, of that number more than half were spread through Quebec, where in 1932 ravages of the sawfly in the Gaspe peninsula brought attention to the insect's menace to spruce forests, and almost as many were released in New Brunswick. The comparatively small remaining number of parasites went to Ontario, Nova Scotia and Manitoba.

Cost Reduction Needed in Pulpwood Cutting

A. Korsleff, forester of the association, presented to the Woodlands Section an exhaustive study of the technique and equipment of pulpwood cutting, this being illustrated with many tables, drawings and photographs. The paper was indeed a manual on the subject, and it was generally agreed that it should prove most helpful in bringing about great savings in costs. Mr. Koroleff said that cutting was by far the largest single item of expense in pulpwood production. It represents, he said, at least 20 per cent of the total cost of prepared wood at the mill—more in the case of 4-foot bolts and less when trees are cut into log lengths. The total cost of cutting pulpwood for the industry in Canada is probably close to $10,000,000 annually, he said.

"This work is done almost entirely by hand and production of cutters varies widely," Mr. Koroleff declared, "greatly affecting the costs. . . . Our operators readily recognize . . . there is much room for profitable improvements."

With so large an outlay for cutting, he said, great economy "would certainly result" from improvement in cutting technique and equipment, and from other required measures of efficiency. The problem is very complex, he admitted, as a great many variables involved in Canadian cutting practices tend to obscure the actual relationship between cause and effect.

"Experience does not suffice," the forestry expert held. "Research is needed. A thorough scientific investigation of our cutting technique under typical conditions is definitely required in order to determine the most desirable methods and the most common faults.

"This study, if properly carried out, is certain to lead to great economy through: (a) improvement of present cutting methods to minimize waste of human energy and thus increase production per man-day; (b) reduction in cutting accidents which are still much too frequent and expensive: (c) rationalization and standardization of tools and economy in their purchasing; (d) improvements in, and greater use of, mechanical equipment . . . ; (e) reduction of wood waste as well as better correlation of our cutting practices with the needs of silviculture and protection."

Study of Special Problems

A Joint Committee of the Woodlands and Technical Sections reported on various problems that had been set out for study during the year. Among their conclusions were:

That in Quebec the wood accessible to present pulp and paper mills is sufficient for present needs, the total annual cut not exceeding the estimated annual increment of the forests available; further, that there is room for considerable expansion of the forest industries in Quebec, providing new units are located on Crown lands not accessible to present established units.

That indications are that sawmill "waste" can be profitably used for the production of sulphite pulp.

That if the time between felling operations and delivery of wood into mill processes is shortened by converting "two-year" wood into "one-year" wood by new methods at equal operating costs there will be a saving of 43½ cents per rough cord apart from reducing working capital requirements. Mechanization of logging operations appear the most profitable means of getting quick delivery.

Salvaging Sawmill Waste

F. A. Soy, of Price Brothers & Co., in a paper on the subject, said that the salvaging of wood material when for many years went into the rivers as waste had brought a tremendous saving to the paper industry. Based on newsprint production, the loss had gone down from 8.3 per cent to 1.1 per cent since 1931.

A study on this subject was also presented by E. S. Fellows and J. B. Prince, of the Forest Products Laboratories of Canada. According to them, a field survey made last summer showed that more than

double an earlier estimate of not less than 200,000 cords of sawmill "waste" available in eastern Canada for making pulp annually "is actually being destroyed at the present time and an even larger quantity could be secured with but little change in established practice in the lumber industry."

What proportion of this material can economically be moved to consuming plants "is, of course, still largely a matter of conjecture, but it is quite plain that the potential market may well be run to two or three million dollars a year," Mr. Fellows told the delegates.

From the standpoint of conservation, he pointed out, this was "no small item in either the national interest or that of the individual companies, but beyond that, the increased use of sawmill 'waste' for pulp seems to offer great promise for the reduction of manufacturing costs for all parties concerned."

Board Section

P. H. Scowen, chairman, reported that while production of board mills was limited in the early part of the year it was in excess of 90 per cent of capacity for the last four months, and on the whole year a new record for consumption in the home market was established, shipments to the domestic market totalling 314,315 tons, an increase of 18½ per cent over 1938. The Canada-United States Trade Treaty, which became effective in January 1, 1939, seriously reduced the protection of Canadian mills and resulted in increased imports of approximately $1,000,000. This in turn necessitated price reductions as a consequence of which manufacturers of shipping case materials operated without profit for the greater part of the year. During the year revised Trade Customs were put into effect, and had proved valuable to the industry and allied trades.

Book and Writing Section

Stable conditions during the first eight months of the past year and a sharp increase in demand since the war were reported by G. A. Davidson, chairman. Pressure of orders on the domestic market and in some instances the United capacity of the Canadian facilities, made it difficult if not impossible for the Canadian mills to give consideration to all the demands received in export markets formerly dependent on European supplies. Problems due to increasing costs and other difficulties were expected in the current year but the operators looked forward with confidence to increasingly beneficial results.

Chemical Pulp Section

Slack conditions in the early part of the year but a tremendous stimulation in the demand for chemical pulp immediately following the onset of war, were reported by F. G. Robinson, chairman. There had been no disposition to exploit this situation, he said, and no upward change in the price of chemical pulps was made until the first quarter of 1940, and then only in moderate degree. The outlook was for a continuance of these conditions and pursuance of the same considered and steady price policy already demonstrated by the industry.

Light Weight Specialties Section

G. L. Carruthers, chairman, reported heavily increased demand for light weight sulphite papers in the last three months of the year, with the mills finding it impossible to fill all of their customers' demands. Curtailment of imports was expected to continue to benefit the mills. Rising costs had to be faced and it was hoped increased prices would not result in a reduction in the demand.

Mechanical Pulp Section

Unprofitable prices in the early part of the year, then a spurt in demand in anticipation of war, with a continuance of increased demands since war broke out, were reported by D. G. Kibbey, chairman. And advance of $10 a ton in the latter part of the year took place, bringing the price to $40, delivered to nearby points in the United States and $36 Atlantic ports. Indications were that if war continues Canada will be able to ship all of its production of ground wood and probably at higher prices than now.

Tissue Section

George Carruthers, chairman, reported that the mills had a larger volume of business than in the previous year. At the time war was declared the mills were approaching capacity production, and since then foreign business had been offered of which they could only accept a small portion. Although special efforts had been made to hold prices on as normal a level as possible some increases had become necessary and more might be expected.

Traffic Section

T. H. Weatherdon, chairman, in his report, said movement of troops, and war supplies would tax the carrying capacity of railroads and ships, but the Section was assured of the full co-operation of the carriers and felt they could promise distribution of pulp and paper with prompt despatch and at costs comcensurate with what the traffic would bear.

Wrapping Paper Section

For the eight months prior to the war, C. H. Featherstonbaugh, chairman, reported, consumption showed an increase over the previous year of slightly over 6 per cent, but since the outbreak of war tonnage had shown a sharp increase, though the productive capacity of the wrapping paper mills still far exceeds the Canadian demand. To maintain stability in the market the mills were doing what they could to prevent over-buying, and although they had absorbed certain extra costs so far there had been no increase in prices.

Hugh Monaghan Wins Again

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 29, 1940—Hugh L. Monaghan, salesman with Wilcox-Walter-Furlong Paper Company has the unique distinction of thrice winning first prize of $25 in a monthly contest conducted by Wheelright Index Bristol for the best printed piece submitted on their papers; five other prizes of $5.00 each are also given.

The unusual feature about the three winning pieces was in the shape of a prospectus for Scott Paper Company, consisting of a salesman's special portfolio, about 15 x 20 inches done in four colors, by offset and silk-screen, which enables the salesmen to show the prospective buyer of Scott tissues just what the company is doing by way of advertising and merchandising.

CONSTRUCTION NEWS

Buffalo, N. Y.—The United States Corrugated Fiber Box Company, Inc., 180 Hopkins street, manufacturer of corrugated boxes and containers, has plans under way for new addition to plant, to be one-story, reported to cost over $50,000, with equipment. It is proposed to proced with work at early date.

New York, N. Y.—National Gypsum Company, 190 Delaware avenue, Buffalo, N. Y., manufacturer of wall board, insulating board and kindred products, has plans maturing for new one-story addition to branch plant at East River and East 150th street, Bronx, New York, in connection with general expansion and improvements, previously referred to in these columns. New structure will be one-story, designed primarily for storage and distribution, estimated to cost close to $100,000, with equipment. Work will begin soon.

Elkhart, Ind.—The American Coat Mills, manfacturers of folding box boards and other coated paper stocks, have plans for improvements in steam power house at mill, including installation of additional equipment, with new steel coal bunker, etc. Carl A. Nelson, 1401 South Main street, South Bend, Ind., is consulting engineer.

Los Angeles, Cal.—The Lloyd A. Fry Roofing Company, 1501 North Tamarind street, Compton, Los Angeles, manufacturer of prepared roofing, roofing papers, etc., has approved plans for construction of new plant on site of former local factory, destroyed by fire last November, to replace that structure and provide for increased capacity. It will be one-story, 225 x 400 feet, estimated to cost close to $100,000, with equipment. General erection contract has been let to Myers Brothers, 3407 San Fernando road, Los Angeles, and work will be placed under way at once. H. Sage Webster, 717 West 165th place, Gardena, Cal., is engineer. Main offices of company are at 5302 West 66th street, Chicago, Ill.

Green Bay, Wis.—The Hoberg Paper Mills, Inc., Elm street, manufacturer of tissue and other paper stocks, has begun work on new one-story addition to local Division B mill, to be equipped as a ground wood unit, with storage tanks and other facilities, recently referred to in these columns. Work will be pushed to early completion. Cost is reported close to $25,000, with equipment.

Louisville, Ky.—The Reynolds Metals Company Inc., 539 West 25th street, New York, N. Y., manufacturer of tin, aluminum and other metal foils, is considering plans for new addition to branch mill on Camp Ground road, Louisville, where site about 350 x 1540 feet is available. It is understood that new structure will occupy the larger part of this tract. It will be used for expansion in the aluminum division, and is reported to cost over $150,000, including equipment.

Meridian, Miss.—The Flintkote Company, 50 West 50th street, New York, N. Y., manufacturer of roll roofing, etc., has selected a large tract of land near city limits of Meridian, to be used as a site for new mill for the production of insulating board and allied specialties. It will consist of a main one-story unit, about 300 x 1200 feet, with a number of auxiliary buildings, power house, machine shop and other mechanical departments, and is estimated to cost in excess of $1,000,000, with machinery. It is understood that work is scheduled to begin early in the spring.

Jackson, Miss.—The Great Southern Box Company, New Orleans, La., manufacturer of corrugated fiber boxes and containers, has begun erection of proposed new plant on Fannin road, East Jackson, where property was acquired recently, as previously noted in these columns. Main structure will be one-story, 70 x 250 feet, with several smaller units, to be equipped for large capacity. Cost is estimated at close to $150,000, including equipment. Completion is scheduled late in the spring. C. R. Underwood, 807 Pinehurst street, Jackson, has the general contract for erection.

Wichita, Kan.—The Whitney Paper Company, 131 North Santa Fe avenue, general paper goods, is considering early rebuilding of portion of storage and distributing plant recently destroyed by fire. Loss is reported in excess of $30,000, with equipment.

Newark, N. J.—The Paper Graders and Sorters Company, organized to deal in waste paper, has leased space in the building at 118 Adams street, totaling about 5000 square feet of floor space, and will occupy at once for new plant.

Portland, Conn.—The Robert Gair Company, Inc., 155 East 44th street, New York, N. Y., manufacturer of corrugated boxes and containers, has preliminary plans under way for new addition to branch mill at Portland, to be located on Main street It will be one-story, reported to cost close to $50,000, with equipment.

Three Rivers, Que.—The Waste Paper Products Company, Ltd., has plans under way for new one-story mill on local site on Sulte street, reported to cost about $45,000, with equipment. Work will be placed under way soon.

New Companies

New York, N. Y.—The Waldorf Paper Company, Inc., has been organized with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Samuel H. Stoller, 395 Broadway, New York, attorney.

Chicago, Ill.—The C. L. Dupont Decal, Inc., 310 South Racine avenue, has been incorporated with capital of 20,000 shares of stock, no par value, to manufacture and deal in paper transfers, etc. The incorporators include M. J. Fredman and M. R. Joseph.

New York, N. Y.—The Transparent Acetate Corporation has been chartered with capital of 100 shares of stock, no par value, to manufacture and deal in transparent paperized boxes and containers. New company is represented by Harry Sacks, 36 West Forty-fourth street, New York, attorney.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for the Week Ending January 31, 1940

	High	Low	Last
A. P. W.	2⅝	2⅝	2⅝
Armstrong Cork Co.	40⅛	39	40
Celotex Corp.	10½	10⅜	10⅜
Celotex Corp., pf.	62	62	62
Certain-Teed Products Corp.	6⅝	6¼	6⅜
Certain-Teed Products Corp., pf.	29⅞	27¾	29½
Champion Paper & Fibre Co.	24⅛	23¼	23¼
Champion Paper & Fibre Co., pf.	102	102	102
Congoleum-Nairn Co.	23¾	23	23
Container Corp. of America	16½	15¾	16⅛
Crown-Zellerbach Co.	16½	15⅝	15⅝
Crown-Zellerbach Co., pf.	91	90	90
Flintkote Co.	19¼	18⅞	18⅞
Robert Gair	3¼	3⅛	3⅛
Robert Gair, pf.	14	14	14
International Paper & Power	13½	12½	12½
International Paper & Power, pf.	55⅜	53	53½
Johns-Manville Corp.	74	72	72
Johns-Manville Corp., pf.	126	125	126
Kimberly Clark Corp.	35¾	35¼	35¼
MacAndrews & Forbes	34¾	34¾	34¾
MacAndrews & Forbes, pf.	134½	134	134½
Masonite Corp.	38½	36¾	36¾
Mead Corp.	10¾	10⅛	10⅛
Mead Corp., pf.	58¼	58¼	58¼
Paraffine Companies, Inc.	42	42	42
Paraffine Companies, Inc., pf.	101½	101	101½
Rayonier, Inc.	19¼	17⅜	17⅜
Rayonier, Inc., pf.	28½	27¾	27¾
Ruberoid Co.	19¼	18⅜	18⅜
Scott Paper Co.	46⅝	46¼	46⅝
Scott Paper Co., pf.	114	114	114
Sutherland Paper Co.	29	29	29
Union Bag & Paper Corp.	14¼	13⅛	13¼
United Paperboard Co.	5⅛	4⅞	4⅞
U. S. Gypsum Co.	89	86½	87
U. S. Gypsum Co., pf.	179½	179½	179½

New York Curb Exchange

High, Low and Last for the Week Ending January 31, 1940

	High	Low	Last
Brown Co., pf.	24	23⅝	24
Great Northern Paper	43	40	40
National Container Corp.	11¾	11	11
St. Regis Paper Co.	3⅛	3	3
St. Regis Paper Co., pf.	74½	72½	73
Taggart Corp.	5¼	5¼	5¼

Hampshire Paper Co. Sold

SOUTH HADLEY FALLS, Mass., January 29, 1940—The Stevens Paper Mills, Inc., of Windsor, Conn., purchased the Hampshire Paper Company mill on January 24, the deed transferring property being passed at that time. The company plans to rebuild the 86 inch machine. The 72 inch machine that is now in the mill will not be run for the present. The manufacture of paper on the 86 inch machine will probably begin by April or May.

The Stevens Company is leasing the finishing room floor to the Hampshire Paper Company, Inc., for its Stationery business. The company is also leasing the two loft floors of the mill to the Carew Manufacturing Company. The Carew Manufacturing Company is starting to build a bridge from the top floor of its mill into the lower loft floor of the Hampshire mill which it is leasing. The second floor of the office is also being leased by the Hampshire Paper Company, Inc., from the Stevens Company. The first floor of the office is being leased by the Plastic Coating Corporation. The Stevens Paper Mills offices will remain in Windsor, Conn., and it will have no company office in South Hadley Falls.

Halifax Loses $95,213

The Halifax Power and Pulp Company, Limited, for 1939 report a net loss before income note interest and income taxes of $95,213, against $44,981 loss on same basis in 1938.

Crystal Stockholders Meet

The annual meeting of the stockholders of The Crystal Tissue Company of Middletown, Ohio, was held in the company's offices on January 23. At the meeting the improvement program of the past year was reviewed and approval given to the plans of the Board of Directors for further plant betterments in 1940. An especially successful year from the standpoint of both business and profits was reported for 1939 with the outlook for an equally profitable year in 1940.

The board of directors re-elected at the meeting consists of E. A. Cahill, E. E. Grant, L. J. Long, Brandon R. Millikin, and D. F. Peck. Officers selected are E. E. Grant, president, L. J. Long, vice-president and general manager, E. A. Cahill, secretary and treasurer, H. H. Harrison, vice-president in charge of production and V. Howard Larsen, vice-president in charge of sales. John J. Cahill was re-appointed assistant sales manager.

E. C. Manning to Study South

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., January 29, 1940—In the hope of securing a valuable lesson in the perpetuation of its forest crop from the Southern pine region of the United States the province of British Columbia has agreed to send E. C. Manning, chief forester, on a visit to the South, according to A. Wells Gray, B. C. Minister of Lands.

Mr. Manning will make a personal investigation of the zone where careful management of a second growth Southern pine has resulted in the rejuvenation of the lumber industry, and the start of a newsprint industry. From his report British Columbia hopes to learn something in dealing with its own problem of forest management that will ensure future crops.

Sutherland Nets $723,190

The Sutherland Paper Company for 1939, report a net profit of $723,190, including $82,984 proceeds from life insurance policy, equal to $2.52 each on 287,000 shares of $10 par capital stock, against $585,-146, or $2.03 a share in 1938.

Consolidated Nets $933,043

The Consolidated Paper Company for the year ended December 31, report a profit of $933,043 after charges and taxes, equal to $1.24 a share on 750,000 shares of common stock, against $843,385, or $1.12 a share in 1938.

Whitaker Earns $203,142

The Whitaker Paper Company for 1939, report a net income of $203,142, equal, after preferred dividends, to $4.86 each on 30,188 shares of common stock, against $153,726, or $3.22 a common share, in 1938.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 110 February 1, 1940 No. 5

COMING EVENTS IN PAPER INDUSTRY

American Paper and Pulp Association, Sixty-third Annual Convention and meeting, Waldorf-Astoria Hotel, New York. February 19-22.

Technical Association of the Pulp and Paper Industry, Convention, Roosevelt Hotel, February 19-22.

Salesmen's Association of the Paper Industry, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 20.

National Paper Trade Association of the United States, Convention, Waldorf-Astoria Hotel. New York. February 19-22.

New York Association of Dealers in Paper Mills' Supplies. Annual Banquet, Hotel Commodore, New York, February 20.

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

MINOR LABOR ACT CHANGES LOOM

The prospect for any major changes in either the Labor Act or the Wage and Hour Law is not very favorable at this date. Despite the attempts to prove charges of injudicious conduct and the allegations of weakness in the procedure followed by the National Labor Relations Board, only minor changes are expected to follow this investigation. It appears probable, however, that the Administration will place the responsibility for failure of the labor and wage hour laws to function efficiently to faulty administrators and faulty procedure, and will effect a change of personnel, modify procedures, and postpone amendment of the laws until new administrators are given an opportunity to show what can be accomplished with the present laws. It seems reasonably clear at this date that leaders hope to appease rising criticism by making these minor adjustments, thus deferring any amendments of either the National Labor Relations Act or the Wage and Hour Law.

The major change now expected to be recommended by the House Labor Committee is for the dismissal of the present three-man Labor Board and its replacement by a new five-man Board. Two changes in the present law are expected to be written in the Committee bill. One of these changes would permit employers to petition for collective bargaining elections, while another would limit the power of the Board to determine employee units which are appropriate for collective bargaining. These changes are expected to meet the demand for changes in the Labor Act recommended by the American Federation of Labor. Other minor changes in the Act, but which are not expected to be made at this session of Congress, but now under consideration, would require strict adherence to rules of evidence in all hearings of the Board, and to segregate prosecuting and judicial functions of the Board.

Changes in the operation of administrative agencies was recommended by Judge Thomas D. Thacher, former Solicitor General of the United States, in an address at the sixty-third annual meeting of the New York State Bar Association, held in New York on January 27. Judge Thacher asserted that most of the evils of administrative agencies performing judicial or quasi-judicial functions, Federal and State, have resulted from violation of "the most fundamental principle of common justice, that a man cannot be a judge of his own cause. Questions affecting individual rights and property rights should be fairly heard and determined by unbiased tribunals at all times subject to the law of the land." In voicing opposition against the proposed adoption of a uniform code for all the State's administrative agencies by the Court of Appeals and one for all Federal agencies by the United States Supreme Court, he said this would be like the attempt of "quack" doctors to prescribe one cure for all patients without seeing them. He recommended that the judicial and quasi-judicial activities of each State administrative agency be studied first by the administrators themselves, in conference with citizens whose interests are involved, "in an effort to devise for the particular agency the rules of practice and procedure which will most surely provide justice and wisdom in administration and in determination of private rights.

"Such experience as I have had in reviewing the records of administrative agencies of the United States persuades me that such tribunals, when given permanency of tenure and independence of decision, render a very high degree of judicial service. I am equally persuaded that such tribunals cannot be unbiased when subject to dictation in the exercise of their judicial functions, and to transfer or removal if their decisions are unsatisfactory, or when their members are charged, when not sitting as triers of the facts of a particular case, with the responsibility of law enforcement."

In a statement by H. W. Prentis, Jr., president of the National Association of Manufacturers, in reply to statements made in a speech by J. Warren Madden, chairman of the National Labor Relations Board, both being presented before the United Christian Council for Democracy, at Cleveland, Ohio, Mr. Prentis said in part: "Mr. Madden told you there has been constant agitation 'among organization such as the National Association of Manufacturers and the United States Chamber of Commerce to take away from millions of Americans fundamental rights deliberately granted to and enjoyed by them.' The reason for the bitter and unceasing campaign against

the National Labor Relations Act lies in the act itself. It provides that employees shall have the right of self-organization, to join or assist labor organizations and to bargain collectively through representatives of their own choosing. When he states that the N.A.M. is opposed to collective bargaining Chairman Madden ignores the record which is written plainly for all to see. Contrary to his allegation, the Association for years in its platforms has affirmed its support of the principle of collective bargaining. . . . Laws and political administrative acts which create suspicion in labor relations and thereby encourage uneconomic practices, will inevitably defeat their own ends by impairing the interests of the public and of labor itself. The functions of industry cannot be performed under conditions of litigation and conflict. . . . Industry does not oppose collective bargaining. What it has opposed, does oppose and will continue to oppose is 'crooked' unions and their racketeering leaders, biased labor boards and one-sided hearings."

Col. Collins Retired from Presidency

ST. LOUIS, Mo., January 29, 1940—Col. M. J. Collins, who is one of the most highly respected executives in the paper and printing industries, and president for the past fourteen years of the Graham Paper Company, has "moved over" from the presidency of the company, but will remain as an active director. In announcing this change Col. Collins said:

"Information concerning important changes in our organization should always come from our headquarters and not from outside sources. After 56 years of active service I shall retire from the Presidency at our annual meeting on January 24, while I am still in good health and have the capacity to fully enjoy well earned leisure.

"I am not severing my connection with this grand old company as I will remain an active director and continue to retain my holdings. I am very happy to announce that Charles W. Lewis, executive vice-president, who has worked shoulder to shoulder with me for 45 years, will succeed me as President. I am also sure you will give him the fine loyal support you have always given me and make 1940 a banner year—One Long to be Remembered.

"My interest in and affection for every one of you shall continue on and on. I shall always be a proud member of our fine old loyal Graham family.

The Graham Paper Company, established in 1885 is one of the largest paper jobbing houses in the world. In addition to the headquarters in St. Louis it has twenty branches throughout the country.

S. L. Wilson Now Florida Resident

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, January 29, 1940—Information has been received by local city officials from the County Tax Collector of Dade County, Florida, that Mr. and Mrs. Sidney L. Willson of 1125 Northampton street, have transferred their legal resident from this city to Miami Beach, Fla. Mr. Willson retired as president of the American Writing Paper Corporation, two years ago. The Florida winter home and now the Willson legal residence is at 1423 Biaritz Drive, Miami Beach.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1940	1939	1938	1937	1936	1935	1934
January	.....	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	.....	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	.....	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	.....	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	.....	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	.....	79.7%	66.0%	87.3%	80.7%	72.3%	.....
July	.....	75.2%	72.0%	81.8%	77.3%	64.9%	.....
August	.....	82.9%	77.2%	82.9%	81.5%	70.9%	.....
September	.....	88.7%	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	96.6%	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	97.2%	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	91.2%	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average.	.....	84.9%	72.3%	80.6%	81.3%	70.5%	.....
First 3 weeks.	91.3%	76.1%	62.5%	90.4%	75.5%	64.1%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS		CORRESPONDING WEEKS	
December 16, 1939.....	97.7%	December 17, 1938.....	81.3%
December 23, 1939.....	94.2%	December 24, 1938.....	75.9%
December 30, 1939.....	76.2%	December 31, 1938.....	62.8%
January 6, 1940.....	89.0%	January 7, 1939.....	70.0%
January 13, 1940.....	94.2%	January 14, 1939.....	80.4%
*January 20, 1940.....	90.4%	January 21, 1939.....	78.0%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	Dec. 16, 1939	Dec. 23, 1939	Dec. 30, 1939	Jan. 6, 1940	Jan. 13, 1940	Jan. 20, 1940
0% to 50%.....	37	30	60	51	44	28
51% to 100%.....	269	272	244	238	238	161
Total Mills Reporting..	306	302	304	289	282	189

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	63%

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	72%	74%	84%	81%	....	....

Week end. Dec. 16, 1939—79% Week end. Jan. 6, 1940—65%
Week end. Dec. 23, 1939—81% Week end. Jan. 13, 1940—74%
Week end. Dec. 30, 1939—46% Week end. Jan. 20, 1940—72%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.
* Preliminary figure.

Salesmen's Annual Luncheon

The annual luncheon of the Salesmen's Association of the Paper Industry will be held during paper week in the grand ball room of the Waldorf-Astoria Hotel, New York, on February 20. A record attendance is expected and arrangements have been made to seat up to 1,000 people. Members are invited to bring as many guests as they desire. It is especially requested that executives of paper firms be present. It is planned to complete the program by 2:30 and the luncheon will begin promptly at 12:30 p. m.

The main address will be delivered by Dr. Frank Kingdon, president of the University of Newark, director of the Citizenship Educational Service, radio commentator and author. His subject will be "Fortunes and Follies of the Forties."

Early reservations are urgently requested and should be made of E. O. Merchant, secretary, 122 East 42nd street, New York.

MORE PAPER . . . BETTER PAPER . . . FROM YOUR MACHINES

Every practical mill man knows that a major factor in running up costs comes in offweight and off-caliper sheets produced by the machines. Reduce the broke due to off-weights, speed up the Monday morning start-up, keep the machines producing steadily, and you're earning a better profit for your company. A sure way to accomplish this is through the use of Meyers Consistency Controllers. We can guarantee the Meyers Controller to maintain pulp stock density within one-eighth of one percent plus or minus from constant. Placed immediately ahead of the paper making machine, it will maintain sheet weight within 2½ percent of basis. *Write for Bulletin No. 1.* It describes the Meyers Consistency Controller, its principle of operation and specification details.

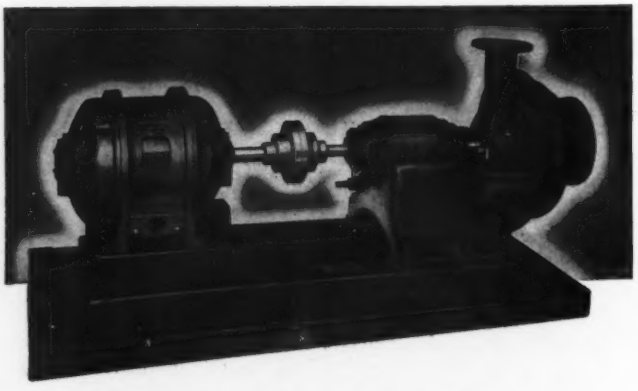
PROCESS CONTROLS, INC., LEROY, N. Y.

HOW MUCH DO YOU PAY ? *for Power Your Pumps throw away**

Figure it out. A pump driven by a 40 H.P. motor can cost as much as $432 per month for power alone. If the pump efficiency is only 10% less than that obtainable with a modern efficient pump, the loss amounts to $518 per year.

Check into your pumping costs. You may discover power losses that run into real money. Replace the power wasters with Warren pumps. Replacement costs are quickly paid off in savings. High operating efficiencies are maintained for long periods—your assurance of lower pumping costs per year —year after year.

* at $.02 per kwh.



WARREN PUMPS

WARREN STEAM PUMP COMPANY WARREN, MASSACHUSETTS

6966

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

United States Patents on Papermaking

Fourth Quarter, 1939

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; it is also possible that some patents have been included which do not apply to papermaking.

Copies of any of the following patents may be obtained from the U. S. Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. The number, name of inventor and title of patent should be given in the request. Personal checks and postage stamps are not accepted. Books of coupons may be purchased for $2.00 or $10.00, good for 20 or 100 patents, respectively. Coupons do not have to be accompanied by letters of transmittal.

October 3, 1939

2,174,514. Method of packaging milk. John M. Hothersall, assignor to American Can Company, New York, N. Y. Filed June 25, 1935. 3 claims. (Cl. 99-181). The empty container (with the closure in open position) is passed through a bath of liquefied paraffin to completely coat and sterilize the interior walls thereof as well as the closure element; during the setting of the coating material the container is filled with a sterile fluid medium.

2,174,534. Chemical process. Joseph Harrel Shipp, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed April 22, 1936. 20 claims. (Cl. 8-118). Cellulose is treated with a parchmentizing agent comprising a sulphuric acid solution of urea or a low molecular weight amide which is soluble in 96 per cent sulphuric acid at 20 deg. C. to the amount of at least 20 parts per 100 parts of acid.

2,174,538. Polystyrol coating composition. Sylvia M. Stoesser and Arnold R. Gabel, assignors to The Dow Chemical Company, Midland, Mich. Filed July 1, 1937. 5 claims. (Cl. 260-36). An organic plastic composition comprising polystyrene plasticized with a salicylate to decrease the permeability and increase the adhesiveness thereof.

2,174,565. Corrugating machine construction. Hobart W. Bruker and William A. Hohman, assignors to George W. Swift, Jr., Inc., Bordentown, N. J. Filed June 18, 1938. 4 claims. (Cl. 154-30). A corrugating machine construction having an adhesive applying roll positioned to apply adhesive to the peaks of a corrugated web passing through the machine.

2,174,593. Wood chipper. Frank Pelot and Richard Gotz, assignors to Carthage Machine Company, Carthage, N. Y. Filed Oct. 27, 1937. 1 claim. (Cl. 144-176). A method of arranging the knife so that the lower end of the log in the chute will not be thrown out of alinement with the chute supporting surface as the log is being cut.

2,174,610. Method of activating clays. James W. Weir, Los Angeles, Calif., assignor of one-third to Henry S. Montgomery, South Pasadena, Calif. Filed Feb. 27, 1939. 2 claims. (Cl. 252-2). Comminuted clay suspended in water is treated with sulphur dioxide and chlorine gas and the activated clay is separated from the soluble reaction products.

2,174,744. Apparatus for pressing a moving web in paper making machines. Harold S. Hill, Quebec, Canada. Filed Feb. 3, 1937. 3 claims. (Cl. 92-49). An apparatus for pressing the paper web, consisting of an endless flexible belt through which pressure is applied to the web before sending the web through heated driers.

2,174,774. V-type bedplate for paper pulp beaters. Archer Le Roy Bolton, assignor to John W. Bolton & Sons, Inc., Lawrence, Mass. Filed July 8, 1936. 3 claims. (Cl. 92-22). A bedplate construction which is bodily transportable.

2,174,782. Log rossing machine. Clinton C. Erickson, Portland, Oreg. Filed Aug. 4, 1937. 1 claim. (Cl. 144-208).

2,174,885. Thermoadhesive composition and articles coated therewith. Ernest L. Kallander, assignor to Dennison Manufacturing Company, Framingham, Mass. Filed Jan. 26, 1937. 5 claims. (Cl. 260-27). A polyvinyl resin having a softening point of about 148 deg. F., a shellac with a softening point of about 157 deg. F., and a fluxing resin having a softening point falling with a range of 90 to 130 deg. F., all components being compatible and being present in approximately the proportions of 60, 20, and 20, respectively.

2,174,894. Process of swelling cellulose fiber sheets. George A. Richter and Kenneth E. Glidden, assignors to Brown Company, Berlin, N. H. Filed Jan. 17, 1938. 12 claims. (Cl. 260-233). The dry cellulose fiber sheet is saturated with water, dipped into sodium hydroxide (about 18 per cent) at room temperature and then pressing to a predetermined alkali content.

2,174,920. Pigment. Max H. Kliefoth, assignor to The Sherwin-Williams Company, Cleveland, Ohio. Filed May 25, 1937. 5 claims. (Cl. 134-58). A pigment comprising a mechanical blend of 10 to 60 per cent of titanium dioxide and an alkaline earth metal sulphate.

2,175,125. Method for forming films and film coatings. Edward L. Mack and Earle H. Morse, assignors to Reynolds Research Corporation, New York, N. Y. Filed June 15, 1937. 18 claims. (Cl. 91-68). A method of extruding the coating material in flat sheet form onto the base material through an orifice spaced from the base material but in proximity thereto.

2,175,154. Method for treating cellulosic material. Albert D. Merrill, assignor to Chemipulp Process, Inc., Watertown, N. Y. Filed June 26, 1935. 13 claims. (Cl. 92-11). The raw material is soaked in a recirculating mass of hot alkaline liquor, drained, soaked in a recirculating mass of acid liquor maintained at elevated but below reaction temperature and then raising the temperature and cooking the material in the acid liquor.

October 10, 1939

2,175,167. Machine for separating and feeding blanks. William Ward Davidson, assignor to Davidson Equipment Corporation, Chicago, Ill. Filed Sept. 27, 1935. 11 claims. (Cl. 209-88).

2,175,257. Manufacture of cellulose. Henry Dreyfus, London, England. Filed June 23, 1936. 8 claims. (Cl. 92-13). Raw material is treated with a 2.5 to 10 per cent sodium hydroxide solution at 120 deg. C. and raising the temperature from 3 to 7 degrees per hour until the final value is between 155 and 180 deg. C.

2,175,274. Refrigerated sealer for wrapping machines. Elmer F. Mertis, assignor to American Machine & Foundry Company, a corporation of New Jersey. Filed July 20, 1935. 5 claims. (Cl. 93-2).

2,175,364. Stencil. Herman F. Rugenstein, Indianapolis, Ind. Filed Feb. 12, 1938. 4 claims. (Cl. 101-127). A main body sheet upon one face of which is applied a plurality of superimposed relatively thin tough sheets of material.

2,175,461. Paper trimming machine. Olaf T. Gylleck and Freeman Barney, assignors to The Challenge Machinery Company, Grand Haven, Mich. Filed July 20, 1938. 5 claims. (Cl. 164-47).

2,175,486. Process of manufacture of starch modification products. Philip A. Singer, Peoria, Ill. Filed Aug. 28, 1937. 4 claims. (Cl. 195-24). Starch in water (25 to 50 per cent dry starch by weight) is heated to 140 to 160 deg. F., diastase is added, the temperature raised to 176 deg. F. and then to boiling, the solution is cooled to 176 deg. F., a cold water infusion of malt is added, the temperature held at 176 deg. F. for 25 to 30 minutes and then raised to boiling.

2,175,544. Wallboard. Jesse William Wagner, Sand Springs, Okla. Filed April 15, 1938. 2 claims. (Cl. 72-116). A composition of paper, an open mesh wire fabric and fibers between the fabric and the base paper.

2,175,656. Container assembling apparatus. James E. Annen, assignor to Sutherland Paper Company, Kalamazoo, Mich. Filed March 27, 1939. 4 claims. (Cl. 93-55.1).

2,175,715. Manufacture of insulating slabs and the like. Paul S. Denning, assignor to F. E. Schundler & Co., Inc., Joliet, Ill. Filed April 22, 1936. 5 claims. (Cl. 92-55). An insulating slab from granules of exfoliated vermiculite, fiber, and cement.

2,175,765. Shake unit. Frank M. Sanger, assignor to The Bagley and Sewall Company, Watertown, N. Y. Filed Dec. 28, 1936. 14 claims. (Cl. 74-44). A method of varying both the frequency and amplitude of the shake without stopping the machine.

2,175,767. Sound-deadening adhesive. Joseph A. Torri, assignor to J. W. Mortell Company. Filed May 14, 1937. 3 claims. (Cl. 134-23.7). Sodium silicate, emulsified asphalt and an inert filler, of non-inflammable, sound deadening adhesive adapted to secure pads to sheet metal.

2,175,773. Process of making gaskets. Leon E. Hoogstoel, assignor to Behr-Manning Corporation, Troy, N. Y. Filed March 8, 1938. 5 claims. (Cl. 91-68). Method of making gaskets from paper-like webs.

2,175,774. Method of making saturated gaskets. Elmer C. Schacht and Nicholas E. Oglesby, assignors to Behr-Manning Corporation, Troy, N. Y. Filed March 8, 1938. 14 claims. (Cl. 91-68). Method of making saturated paper gaskets of definite size and shape from paper.

2,175,781. Process for the manufacture of sodium silicate detergents. Walter S. Riggs and Clarence W. Burkhart, assignors to Pennsylvania Salt Manufacturing Company, Philadelphia, Pa. Filed March 18, 1937. 5 claims. (Cl. 87-5).

2,175,953. Method of making boxes. Clarence Lloyd Claff, Randolph, Mass. Filed May 31, 1938. 3 claims. (Cl. 93-36).

2,176,038. Stabilization of glue, casein, and other protein materials. Sidney Musher, assignor to Musher Foundation Incorporated, New York, N. Y. Filed Oct. 10, 1938. 14 claims. (Cl. 134-12). Use is made of an unbleached, finely divided cereal flour.

October 17, 1939

R21,240. Manufacture of sensitized photographic printing paper and cloth. John Holden, assignor to Keuffel & Esser Company, Hoboken, N. J. Original application No. 2,158,422, dated May 16, 1939. Application for reissue, Aug. 25, 1939. 14 claims. (Cl. 95-6). A blueprint paper.

2,176,093. Apparatus for and method of double web coating. Carle J. Merrill, Portland, Maine. Filed April 12, 1937. 10 claims. (Cl. 91-18). Means for applying a coating of semi-liquid material to a traveling web, a pair of air-jets for smoothing the coating, a pair of deflector plates which also forms in part an expansion chamber for air from said jets.

2,176,147. Method and apparatus for forming and filling cartons. Frank D. Palmer, assignor of one-third each to Cranston Spray and Oliver P. Kline, Chicago, Ill. Filed Oct. 4, 1937. 35 claims. (Cl. 93-3).

2,176,166. Coated container. Walter D. Bowlby and Marcus L. Little, assignors to Hercules Powder Company, Wilmington, Del. Filed March 23, 1935. 5 claims. (Cl. 91-68). A surface coating for a highly porous fibrous material comprising an aqueous emulsion of a viscous solution of cellulose nitrate of the oil in water type.

2,176,198. Paper winder. Eral E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed Jan. 24, 1938. 30 claims. (Cl. 242-65). Means swingable about the axis of the winder drum and operable on the ends of the winder shaft for maintaining a desired pressure between the winder shaft and winder drum.

2,176,216. Container and method of making the same. Robert C. Fenner, assignor to Dixie-Vortex Company, Chicago, Ill. Filed June 19, 1937. 12 claims. (Cl. 93-36.1). A paper cup.

2,176,370. Method of forming a container. Melvin Wagner, assignor to The Liquid Carbonic Corporation, Chicago, Ill. Filed Dec. 10, 1936. 6 claims. (Cl. 93-35). A container, substantially impervious to gases and liquids, in which the paper is coated with an impervious varnish and a thermoplastic medium, the whole being subjected to heat and pressure to seal the container.

2,176,393. Material conditioner. Jacob Edge, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed Aug. 30, 1938. 17 claims. (Cl. 91-54). A pair of press rolls, an endless felt for each roll, means to apply liquid to each felt, suction boxes to regulate the moisture content of the felt when it passes between the press rolls and means to feed material between the felts at the press rolls.

2,176,418. Coating machine. Eugene G. Daley, assignor to Chas. E. Francis Co., Rushville, Ind. Filed May 9, 1938. 5 claims. (Cl. 91-48). Design for end plates confining material in trough-like space formed by applicator and doctor rolls.

2,176,431. Loose-belt drive for paper making machines. Bernard A. Malkin, assignor to Dominion Engineering Works Limited, Lachine, Quebec, Canada. Filed Jan. 11, 1937. 14 claims. (Cl. 74-242.7).

2,176,584. Method of forming a seam. Adrian O. Daller, assignor to Utility Packages, Inc. Filed May 6, 1933. 1 claim. (Cl. 154-42). Method of providing a waterproof seam between wax-coated surfaces using an adhesive containing latex.

2,176,835. Method of saturating. Donald A. Cumfer, assignor to United States Gypsum Company, Chicago, Ill. Filed May 25, 1936. 4 claims. (Cl. 91-68). The process comprises periodically exerting oppositely directed forces transversely of and substantially parallel to the broad surface of a web to cause alternate loosening and compacting of the fibers of the web while passing through a saturating medium.

2,176,850. Preparation of cellulose derivatives. Lionel Elmer Goff, assignor to The Cellulose Research Corporation, East Alton, Ill. Filed June 7, 1937. 7 claims. (Cl. 260-227). In purifying wood pulp for acetylation, sulphite pulp is washed with water at an elevated temperature, defibered, screened, chlorinated, washed with sodium hydroxide, bleached with hypochlorite, etc.

2,176,854. Colored fiberboard. Joseph W. Gill, assignor to United States Gypsum Company, Chicago, Ill. Filed Feb. 3, 1937. 3 claims. (Cl. 92-21). The following (in ounces) are used per 1,000 pounds of vegetable fibers: brilliant paper yellow 6.5-8, brilliant crocein 5-5.5, nigrosine 2.5-4; the following in pounds: red oxide of iron 4-15, carbon black 3-3.5, alum 20-40.

October 24, 1939

2,176,981. Method of coating the surface of wallboard and the like. Dillon F. Smith and Oscar T. Close, assignors to Armstrong Cork Company, Manheim Township, Lancaster County, Pa. Filed Dec. 10, 1936. 6 claims. (Cl. 91-68). The board is coated with an aqueous paint containing a binder and then subjected to heat and pressure.

2,177,117. Method of and apparatus for forming tying strips and applying the same to bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed May 3, 1937. 10 claims. (Cl. 93-8).

2,177,118. Apparatus for forming tying strips and applying the same to bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed March 9, 1938. 1 claim. (Cl. 271-45).

2,177,250. Process for producing blended pigment. Marion L. Hanahan and Rodolphe A. Gagnon, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed May 27, 1937. 6 claims. (Cl. 134-58). A blended pigment, produced by subjecting calcium sulphate containing less combined water than the dihydrate to hydration in the presence of a water suspension of a titanium pigment.

2,177,251. Process for producing blended pigments. Marion L. Hanahan and Rodolphe A. Gagnon, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed May 27, 1937. 6 claims. (Cl. 134-78). A blended calcium sulphate-zinc sulphide pigment.

2,177,418. Coating composition comprising a soluble cellulose compound and a protective agent. Carleton Ellis, assignor to Ellis-Foster Company, Montclair, N. J. Filed Oct. 18, 1926. 8 claims. (Cl. 260-16). A composition comprising nitrocellulose of low viscosity and a fatty-oil-acid phthalic glyceride resins.

2,177,490. Art of making indented material. John E. Kieffer, Ewing, Ind. Filed April 9, 1936. 12 claims. (Cl. 154-33). A sheet or web of indented paper.

2,177,549. Mounting for abrasive segments. Henry P. Kirchner, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Feb. 9, 1938. 7 claims. (Cl. 51-207). A pulp grinding wheel element.

2,177,550. Segmental abrasive wheel. Leon A. Pratt, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Feb. 23, 1939. 5 claims. (Cl. 51-207). An abrasive wheel comprising a plurality of abrasive annuli.

2,177,557. Method of treating wood or lignin or cellulose containing materials for obtaining valuable products. Hilding Olof Vidar Bergstrom and Karl Nicolaus Cederquist, Stockholm, Sweden. Filed Feb. 24, 1937. 3 claims. (Cl. 202-5). Heating wood with calcium hydroxide and water at 220 to 360 deg. C., giving alcohols, ketones, oils, and salts of organic acids.

2,177,580. Process of coating paper. Laurence W. Porter, assignor to S. D. Warren Company, Boston, Mass. Filed Jan. 4, 1937. 4 claims. (Cl. 91-68). An aqueous coating composition comprising carbohydrate adhesive and pigment is added, to which is superimposed a composition of protein adhesive and pigment, the two layers bonding together at a more or less plane interface.

October 31, 1939

R21,251. Method of manufacturing cellulose according to the sulphite method. Torsten E. Waenerlund, assignor to Mooch Domsjö Aktiebolag, Ornskoldsvik, Sweden. Original No. 1,809,499, dated June 9, 1931. Application for reissue April 4, 1939. 4 claims. (Cl. 92-11).

2,177,627. Adhesive sheeting. Richard Gurley Drew, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed Feb. 18, 1938. 16 claims. (Cl. 91-68).

2,177,643. Method of producing fibrous cementitious tubes. John Ferla, assignor to Levi H. Blouch, Merchantville, N. J. Filed Jan. 12, 1938. 9 claims. (Cl. 92-66). Method of forming tubes from essentially asbestos and cement.

2,177,645. Moistureproof coated sheet. Robert B. Flint and James A. Mitchell, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Sept. 8, 1937. 11 claims. (Cl. 91-68). A thin, flexible, slippery, non-fibrous, transparent sheet.

2,177,652. Machine for making cups. Herbert M. Hill, Leonia, N. J. Filed Oct. 6, 1936. 27 claims. (Cl. 93-60).

2,177,722. Paper cutting and folding mechanism. Henry Josephs, assignor to Hoell Brothers Machine Shop, Green Bay, Wis. Filed Dec. 28, 1936. 12 claims. (Cl. 164-68).

2,177,768. Stencil sheet. Henry M. Carscallen, San Francisco, Calif. Filed Dec. 21, 1937. 5 claims. (Cl. 41-38.6).

2,178,121. Apparatus for shaping paper. William Lockhart, assignor to The National Steel Barrel Company. Filed Oct. 29, 1935. 4 claims. (Cl. 154-30).

2,178,211. Optical apparatus. Philip Nolan, assignor to The Institute of Paper Chemistry, Appleton, Wis. Filed April 23, 1937. 6 claims. (Cl. 88-14). Device for measuring spectral reflectance in the visible light range.

2,178,266. Continuous process for the manufacture of semi-pulp. Umberto Pomilio, assignor to Pomilio Corporation, Limited, London, England. Filed July 16, 1937. 1 claim. (Cl. 92-13). Straw is mixed with 1 per cent alkali, the material passed through a reaction tower at a temperature of 75 to 100 deg. C., dewatered, and 100 parts of this straw is treated with a mixture of 4 or 5 parts of chloride diluted with about an equal volume of air, the product being finally treated with dilute alkali.

2,178,475. Coating composition. Friedrich Frick, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed March 19, 1931. 15 claims. (Cl. 260-6). The binding agent is an aqueous emulsion of a condensation product of a polyhydric alcohol, phthalic acid and linoleic acid.

November 7, 1939

2,178,566. Process of gluing porous materials. Theodore Williams Dike and Harry Galber, assignors to I. F. Laucks, Inc., Seattle, Wash. Filed Aug. 11, 1936. 15 claims. (Cl. 144-309). A semifluid aqueous alkaline oilseed residue proteinous adhesive.

2,178,586. Recovery of lime sludge. Herman L. Joachim, San Francisco, Calif. Filed Feb. 21, 1938. 6 claims. (Cl. 23-186). Calcium carbonate sludge (about 50 per cent of water) is mixed with about 10 per cent by weight of calcium oxide and preheated before calcination.

2,178,606. Paper manufacture. Joseph E. Plumbstead, assignor to Raffold Process Corporation, Andover, Mass. Filed July 11, 1933. 9 claims. (Cl. 92-21). The reaction product of substantially water-insoluble carbonate and a copper compound in water is used as a filler.

2,178,625. Fireproofing treatment and composition. Edwin C. Clayton and Lawrence L. Heffner, assignors to Wm. E. Hooper & Sons Company, Baltimore, Md. Filed Jan. 7, 1938. 9 claims. (Cl. 91-68). A fire-retarding agent is impregnated in the pores of the treated material which is then coated with a chlorinated organic material.

2,178,631. Apparatus for surfacing felted sheets. Orcutt W. Frost, assignor to Wood Conversion Company, Cloquet, Minn. Filed March 23, 1936. 8 claims. (Cl. 92-39). A cyclically movable member having teeth or fingers which act on the surface and means for moving the member at a non-constant speed.

2,178,649. Process for bleaching wood pulp. John Schuber, assignor to The Solvay Process Company, New York, N. Y. Filed Nov. 10, 1938. 7 claims. (Cl. 8-105). An aqueous suspension of the pulp is treated with a chlorine bleach solution at a pH of from about 8.3 to 10 until the bleach has been substantially completely exhausted and thereafter increasing the alkalinity of the mixture.

2,178,680. Expander for storage batteries and method of making the same. Robert A. Daily, assignor to General Motors Corporation, Detroit, Mich. Filed Nov. 15, 1937. 10 claims. (Cl. 136-26). An expander for the addition to the paste of storage battery plates, a nickel salt of sulphonated lignin.

2,178,696. Material treatment. Irving E. Muskat and George H. Cady, assignors to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed Feb. 3, 1938. 7 claims. (Cl. 8-108). A bleaching process which comprises treating a quantity of water with chlorine monoxide to produce a solution of hypochlorous acid and bleaching fibrous material with this solution.

2,178,832. Molded pulp article. Merle P. Chaplin, assignor to Chaplin Corporation, South Portland, Maine. Filed May 26, 1937. 6 claims. (Cl. 229-2.5).

2,178,855. Grinding stone. John E. Hassler, assignor to Simonds Worden White Co., Portland, Oreg. Filed Feb. 19, 1938. 4 claims. (Cl. 51-206). An artificial pulp grinding stone.

2,178,922. Web feeding and conditioning device. John W. Smith, assignor to Battle Creek Bread Wrapping Machine Company, Battle Creek, Mich. Filed Oct. 28, 1937. 12 claims. (Cl. 93-2). Apparatus for feeding previously waxed paper and means for cooling and conditioning the paper.

2,179,057. Heat insulation. Cylde C. Schuetz, assignor to United States Gypsum Company, Chicago, Ill. Filed May 3, 1937. 8 claims. (Cl. 154-45). A laminated structure comprising a plurality of membranes each of which is indented from one side.

2,179,116. Method and apparatus for testing the folding endurance of paper and like materials. James d'A. Clark, Rose Valley, Pa. Filed March 13, 1937. 6 claims. (Cl. 73-51).

2,179,154. Fractionation or classification of finely divided solids. Sanford C. Lyons, assignor to Bird Machine Co., Walpole, Mass. Filed Feb. 2, 1938. 9 claims. (Cl. 209-12). A process of fractionating finely divided solid material of widely varying particle size.

2,179,181. Cellulose solutions and process of making same. Charles Graenacher and Richard Sallmann, assignors to the firm of Society of Chemical Industry in Basle, Basel, Switzerland. Filed April 1, 1937. 12 claims. (Cl. 106-40). Cellulose is dissolved in a liquid consisting of oxides of tertiary amines.

2,179,339. Adhesive composition. Julius G. Little, assignor to Hercules Powder Company, Wilmington, Del. Filed Sept. 17, 1936. 10 claims. (Cl. 134-23.7). A liquid organic hydrogenated abietate (25 to 80 per cent) and a resin.

2,179,456. Method of and apparatus for treating pulp residual liquor. George H. Tomlinson, Westmount, Quebec, Canada, and Leslie S. Wilcoxson, assignors to The Babcock & Wilcox Company, Newark, N. J. Filed Oct. 27, 1936. 15 claims. (Cl. 23-48). Sulphite waste liquor is burned in a furnace chamber under furnace conditions and the ash is removed by flotation in the heating gases and separated after leaving the furnace.

2,179,463. Method of making bags. True M. Avery, assignor to Union Bag & Paper Corporation, Hudson Falls, N. Y. Filed July 17, 1937. 3 claims. (Cl. 93-35).

2,179,464. Bag manufacture. True M. Avery, assignor to Union Bag & Paper Corporation, Hudson Falls, N. Y. Filed July 17, 1937. 20 claims. (Cl. 93-14).

November 14, 1939

2,179,487. Abrasive article. Raymond C. Benner and Norman P. Roble, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Oct. 29, 1937. 3 claims. (Cl.

51-280). The adhesive consists principally of the reaction product of lignin, a phenol and an aldehyde, containing not more than 40 per cent lignin.

2,179,562. Method of coating webs. Philip H. Pennell, assignor to Armstrong Cork Company, Lancaster, Pa. Filed July 24, 1936. 11 claims. (Cl. 91-70). Applying a film to a base, said film including oil and a resinoid which is but difficultly soluble in the oil.

2,179,796. Circulation system for wood pulp digesters. Einar Morterud, Oslo, Norway. Filed Oct. 8, 1937. 1 claim. (Cl. 92-7). A system for positive circulation of the digesting liquor.

2,179,953. Cigarette paper. Earle C. Pitman, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Dec. 18, 1936. 8 claims. (Cl. 131-36). A water-resistant cigarette paper comprising a discontinuous coating of a wax and a mineral oil, the wax having a melting point of about 60 deg. C.

2,180,046. Calendering machine. Paul Gleissner, Dusseldorf, Germany. Filed June 22, 1938. 4 claims. (Cl. 308-62). A vertical guide slot in a housing frame, bearing casings, etc.

2,180,054. Paper maker's drier felt. Thomas Hindle and Sam Lord, Blackburn, England. Filed Aug. 2, 1938. 2 claims. (Cl. 139-408). Method of manufacture of a two-layer drier felt.

2,180,058. Jacquard card and verdol paper roll repeater cutting machine. Norman Jones, Manchester, England. Filed July 26, 1938. 7 claims. (Cl. 164-114).

2,180,080. Apparatus for refining paper stock. Edwin Cowles, assignor to The Cowles Company, Princeton, N. J. Filed July 5, 1935. 10 claims. (Cl. 92-26).

2,180,152. Adhesive. Rüdolf Köhler, assignor to Henkel & Cie., G.m.b.H., Dusseldorf-Holthausen, Germany. Filed Nov. 7, 1936. 4 claims. (Cl. 134-23.5). A gelatinous adhesive for wall paper hanging, composed of a viscous aqueous colloidal solution of from 3 to 5 per cent concentration of a water-soluble salt of an ether of cellulose with lower molecular carboxylic acid.

2,180,243. Method of making a bottle sealing cap. Harry F. Kniesche, Baltimore, Md. Filed Jan. 9, 1939. 2 claims. (Cl. 93-48).

2,180,305. Method of insulating panels. Edwin O. Groskopf, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Nov. 30, 1935. 2 claims. (Cl. 154-28). A relatively impermeable fibrous sound deadening or vibration damping material is united to an impervious metal panel by an aqueous emulsion of a waterproof substance.

November 21, 1939

R21,268. Photographic backing paper. Ernest Loring Baxter, assignor to Eastman Kodak Company, Rochester, N. Y. Original No. 2,153,130, dated April 4, 1939. Application for reissue Sept. 30, 1939. 8 claims. (Cl. 95-9).

2,180,338. Method and apparatus for forming paper packages. William S. Cloud, Wilmette, Ill. Filed June 2, 1937. 11 claims. (Cl. 93-1).

2,180,387. Ornamentally coloring paper. Ethan F. Bassford, assignor to George La Monte & Son, Nutley, N. J. Filed Sept. 23, 1937. 5 claims. (Cl. 8-7). A method of surface coloring of paper.

2,180,431. Method of and machine for producing crinkled paper lined bags. Francis T. Robinson, assignor to Arkell Safety Bag Company, New York, N. Y. Filed June 23, 1933. 11 claims. (Cl. 93-8).

2,180,433. Method of and apparatus for manufacturing wallboard joint tape. John Page and Charles R. Southwick, assignors to United States Gypsum Company, Chicago, Ill. Filed Dec. 27, 1937. 19 claims. (Cl. 93-1). Tapes with wavy edges are moistened and stretched.

2,180,485. Apparatus for making measurements and graphs of successive tree ring widths. Linton M. Solomon, Macon, Ga. Filed May 19, 1938. 8 claims. (Cl. 33-174). Apparatus for measuring the width of successive tree rings from a tree boring and automatically translating the measurements into a proportional graph.

2,180,495. Recovery of sulphur dioxide. Raymond F. Bacon, Bronxville, N. Y. Filed May 18, 1938. 9 claims. (Cl. 261-111).

2,180,517. Making cellulose derivatives. Lionel Elmer Goff, assignor to The Cellulose Research Corporation, East Alton, Ill. Filed Nov. 28, 1936. 2 claims. (Cl. 260-227). Unbleached sulphite pulp is converted into a permeable network of activated cellulose which comprises removing the ligneous material by treatment with an amount of chlorine that is exhausted in the order of 20-30 minutes, removing the reaction products with dilute alkali, bleaching with hypochlorite and boiling with 7 per cent sodium hydroxide.

2,180,554. Method for handling strands. John N. Selvig, assignor to Western Electric Company, Inc., New York, N. Y. Filed Nov. 13, 1936. 5 claims. (Cl. 92-41).

2,180,570. Apparatus for finishing the edges of wallboard. Curry Ora Walper, Hamilton, Ontario, Canada. Filed July 16, 1937. 9 claims. (Cl. 51-80). A grinder for the edges of the board.

2,180,608. Bag testing device. Cecil B. Pooler, assignor to United States Gypsum Company, Chicago, Ill. Filed April 14, 1937. 2 claims. (Cl. 73-51). A cylinder rotating about a horizontal axis and having a bag supporting member mounted within the cylinder by which a filled bag is lifted to a predetermined height and repeatedly dropped until the bag is ruptured.

2,180,723. Manufacture of fabric-reinforced artificial leathers. Milton O. Schur and Benjamin G. Hoos, assignors to Brown Company, Berlin, N. H. Filed May 10, 1935. 10 claims. (Cl. 154-40). A method of bonding a felt and a fabric by passing through a bath of settable liquid binder and then through rolls.

2,180,742. Process of refining clay. Sanford C. Lyons, assignor to Bird Machine Co., Walpole, Mass. Filed May 12, 1937. 13 claims. (Cl. 252-8). Clay containing ferric oxide, which has been reduced to a water-soluble ferrous salt, is treated with alkali-metal polymetaphosphate in amount sufficient to inhibit reversion to ferric oxide and the clay is separated from the suspension.

2,180,934. Molded product. Harry M. Dent and Arthur J. Norton, assignors to General Plastics, Inc., North Tonawanda, N. Y. Filed March 19, 1935. 2 claims. (Cl. 154-43). A fibrous sheet material included within hardened phenolic resin.

2,180,954. Machine for making, filling and sealing containers. John K. M. Harrison, Ogontz, Pa. Filed Oct. 11, 1937. 54 claims. (Cl. 93-3).

2,181,035. Tubing and method of making the same. Clayton E. White, assignor to Stone Paper Tube Company, Washington, D. C. Filed Feb. 14, 1938. 2 claims. (Cl. 154-2.6). A composite tube of laminated construction, comprising a plurality of layers of spirally wound, fiberless, cellulose material.

2,181,043. Felted fabric and method of making the same. Hugo Boeddinghaus, assignor to American Felt Company, New York, N. Y. Filed July 8, 1939. 12 claims. (Cl. 28-1). Forming a mixture of natural fibrous material and stretched thermoplastic fibers into a batt, felting the batt to bond the material and heating the same to shrink the thermoplastic fibers and thereby shrinking in the entire fabric in both directions.

November 28, 1939

2,181,117. Method of making continuous manifolding stationery. Carl W. Brenn, assignor to Autographic Register Company, Hoboken, N. J. Filed April 9, 1938. 8 claims. (Cl. 270-21).

2,181,129. Adhesive. Albert J. Heberer, assignor to The Glidden Company, Cleveland, Ohio. Filed Jan. 21, 1936. 4 claims. (Cl. 134-23.1). Glue containing 5 to 20 per cent of phosphatide.

2,181,160. Moistureproof material. Fred K. Shankweiler, assignor to Hercules Powder Company, Wilmington, Del. Filed Aug. 11, 1934. 4 claims. (Cl. 91-68). A sheet of glassine paper coated with a thin film composed of a composition including chlorinated rubber and a wax, the wax being in amount such that the said film will be substantially transparent.

2,181,197. Device for making box blanks. Robert F. Moritz, assignor to Samuel M. Langston Co., Camden, N. J. Filed April 8, 1939. 12 claims. (Cl. 164-28). A device to be mounted on a rotary slitter head for making the end cuts of a flap extension on one side of an advancing box blank.

2,181,211. Feeding mechanism for box blank machines. Karl Sieg, assignor to Samuel M. Langston Co., Camden, N. J. Filed June 22, 1939. 14 claims. (Cl. 93-58.2).

2,181,214. Package making machine. Floyd B. Stone, Russell C. Arquette, Charles F. Rossetter and Richard J. Rossetter, assignors to Paul Hawkins Company, Los Angeles, Calif. Filed May 18, 1936. 10 claims. (Cl. 93-39.1). Machine for manufacturing tubular containers from strip material.

2,181,330. Method of and apparatus for recovering chemicals from cellulose waste liquors. Erkki Johannes Janhunen, Karihaara, Kemi, Finland. Filed April 10, 1937. 10 claims. (Cl. 23-48). The liquor is allowed to flow in a relatively thin film over a stationary, inwardly inclined surface during which it is evaporated, and the dried matter is burned, the gases being used in the evaporation.

2,181,363. Hectograph carbon and copy sheet assembly. Richard V. Bowman, assignor to Kee-Lox Manufacturing Company, Rochester, N. Y. Filed Dec. 14, 1938. 5 claims. (Cl. 41-31.6).

2,181,518. Envelope-making machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed April 16, 1938. 6 claims. (Cl. 93-62).

2,181,556. Fibrous material. Sidney D. Wells, Combined Locks, Wis., assignor of one-half to Gerald D. Muggleton, Appleton, Wis. Filed Feb. 9, 1935. 1 claim. (Cl. 92-3). A paper which is strong and dense in structure containing 85 to 50 per cent of waste paper stock and from 15 to 50 per cent of non-fibrous pithy material from processed plant material.

2,181,639. Paper die cutting machine. Edma H. Curtis, Jr., assignor to The Nivison-Weiskopf Company, Reading, Ohio. Filed April 10, 1939. 9 claims. (Cl. 164-21). A machine for cutting labels and the like.

2,181,645. Paper tube making machinery. David C. Spaulding, assignor to The Standard Oil Company, Cleveland, Ohio. Filed Aug. 20, 1937. 20 claims. (Cl. 93-81).

2,181,731. Multiple effect evaporator and the like. William T. Hinckley, assignor to Whiting Corporation, Harvey, Ill. Filed June 28, 1937. 4 claims. (Cl. 159-17). A method of reducing the tendency toward foaming of thin black liquor in the initial concentration in a multiple effect evaporator which consists in introducing such liquor from a common source simultaneously into a plurality of sub-effects in parallel independent streams, subjecting such streams to different temperatures and to different degrees of vacuum and finally mixing them.

2,181,785. Process of liberating cellulose from bagasse. John P. Foster and Herman L. Joachim, assignors to Maui Agricultural Company, Ltd., Paia, Hawaii. Filed Sept. 16, 1937. 16 claims. (Cl. 92-9). The bagasse, prior to the digestion treatment, is subjected to a cane wax solvent to remove the wax from the fiber bundles.

2,181,811. Coated laminated structural material. Everett C. Hughes, assignor to The Standard Oil Company, Cleveland, Ohio. Filed May 19, 1937. 11 claims. (Cl. 91-68). Fibrous layers of sheet cellulose laminated with sodium silicate, gum arabic, glycerol, and soap.

December 5, 1939

2,182,002. Bag making machine. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Feb. 25, 1938. 15 claims. (Cl. 93-19).

2,182,096. Coating pigment and method of making same. Howard Roderick, assignor to The Michigan Alkali Company, Wyandotte, Mich. Filed June 15, 1937. 4 claims. (Cl. 134-58). Method of precipitating calcium carbonate from sodium carbonate, sodium bicarbonate and calcium chloride at 150 to 220 deg. F.

2,182,219. Paper shredder. Erle G. Ashley, Memphis, Tenn. Filed April 11, 1938. 4 claims. (Cl. 164-61).

2,182,274. Preparation of cellulose pellets. Louis S. Baker and George Lewis Schwartz, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Aug. 25, 1937. 2 claims. (Cl. 92-54). A pulp slurry of papermaking consistency is fed onto a forming screen in the form of uniformly sized platelets or patches, removing the liquid by suction and removing the platelets from the screen by a rubbing and rolling action and drying.

2,182,353. Method of making asbestos and cement products. Ernest Wayne Rembert and Dominic Bertogliat, assignors to Johns-Manville Corporation, New York, N. Y. Filed March 24, 1937. 2 claims. (Cl. 92-66). Method of preparing felted asbestos-cement products from a dilute aqueous pulp of Portland cement and asbestos fibers.

2,182,357. Manufacture of casein products. Charles Schwartz, assignor ot Hall Laboratories, Inc., Pittsburgh, Pa. Filed June 17, 1937. 6 claims. (Cl. 134-12). A casein product suitable for coating and sizing is formed from casein and an alkali-metal tripolyphosphate.

2,182,391. Pulp refiner. Max Skolnik, assignor to National Fibre Corporation, New York, N. Y. Filed Feb. 11, 1935. 11 claims. (Cl. 92-26).

2,182,428. Method of recovering the solids from pulp mill waste liquors. Erling Fladmark, Lawrence, Mass. Filed Nov. 11, 1935. 1 claim. (Cl. 159-48). The liquor is continuously sprayed against the surface of a body of heated liquid heat transfer medium within an evaporator at such a rate that the water is evaporated before the liquor and liquid heat transfer medium can mix while the solid residue of the waste liquor is being continuously absorbed in dry condition by the liquid heat transfer medium and continuously removed from the evaporator with the latter.

2,182,513. Method of sealing waxy substances. William I. Buckeridge, assignor to Standard Oil Company, Chicago, Ill. Filed May 14, 1936. 5 claims. (Cl. 154-40). One of the waxy surfaces is treated with a coating of hydrocarbon plastic selected from the class consisting of isobutylene polymers and hydrogenated rubber and the surfaces are pressed together at ordinary temperature.

2,182,520. Production of pulp from highly resinous wood. Kurt Schwabe, assignor to the firm of Kübler & Niethammer, Kriebstein, Post Waldheim in Saxony, Germany, and Chemische Fabrik Coswig-Anhalt, G.m.b.H., Coswig in Anhalt, Germany. Filed Sept. 22, 1937. 1 claim. (Cl. 92-6). There is added to the pulp during the grinding operation barium

hydroxide which precipitates the resin as an insoluble barium resin soap; the addition is limited so that the pH of the pulp water does not exceed 7.

2,182,720. Creping method and apparatus. William H. Cannard, Green Bay, Wis. Filed Oct. 20, 1936. 17 claims. (Cl. 154-30).

2,182,765. Method of moistureproofing regenerated cellulose. Charles Forbes Silsby, assignor to The Solvay Process Company, Syracuse, N. Y. Filed Aug. 16, 1937. 6 claims. (Cl. 91-68).

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2,182,880. Mechanism for assembling match packets and the like. William Roberts, assignor to The Diamond Match Company, New York, N. Y. Filed May 10, 1938. 8 claims. (Cl. 226-4).

2,182,928. Paper making machinery. James B. Mehaffey, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed April 29, 1937. 6 claims. (Cl. 271-2.6). A positioning device consisting of a cylindrical guide roll, etc.

2,183,029. Match book machine. Samuel E. Rahe, assignor to Berst-Forster-Dixfield Co., New York, N. Y. Filed March 16, 1938. 2 claims. (Cl. 93-2).

2,183,039. Recovering cellulose ethers from coated paper. Richard D. Freeman, assignor to The Dow Chemical Company, Midland, Mich. Filed April 11, 1939. 6 claims. (Cl. 260-232). Coated paper is digested with a dilute solution of an alkali with agitation and the cellulose ether is separated from the slurry of cellulose fibers.

2,183,163. Carton sealing machine. Stanley R. Howard, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed June 17, 1938. 5 claims. (Cl. 93-6).

2,183,224. Shredding device. Sigurd Norman, assignor to Pulp-Paper Machines, Ltd., Portland, Oreg. Filed Dec. 14, 1937. 9 claims. (Cl. 144-176).

2,183,247. Process of making coupon receptacles. George W. Poppe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed August 27, 1938. 5 claims. (Cl. 93-35). Method of forming a double flap coupon bag.

2,183,259. Process for recovering and reusing constituents of waxed paper. Arnold M. Hill, assignor to National Oil Products Company, Harrison, N. J. Filed March 3, 1937. 7 claims. (Cl. 92-3). The waxed paper is disintegrated in water heated to a temperature sufficiently high to melt the wax, which is then emulsified with a mineral oil sulphonate and a sulphonated oil, fat or wax.

2,183,315. Decalcomania. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Company, Chicago, Ill. Filed Feb. 11, 1937. 9 claims. (Cl. 41-33).

2,183,474. Manufacture of carbon paper. Josef Burgmer, Wuppertal-Barmen, Germany. Filed Dec. 5, 1936. 8 claims. (Cl. 91-48). A series of rolls for the manufacture of carbon paper from a thin, porous paper web.

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2,183,532. Pregummed hanging paper. Hans F. Bauer, assignor to Stein-Hall Manufacturing Company, Chicago, Ill. Filed Jan. 23, 1939. 9 claims. (Cl. 91-68). The adhesive is a mixture of substantially undegraded starch and a degraded amylaceous substance with specified properties.

2,183,580. Carbon paper. Allan K. Ohashi, Babylon, N. Y. Filed May 25, 1937. 7 claims. (Cl. 91-68). A sheet is coated and impregnated with a suitable normally solid carbon-containing color composition and then impregnating the sheet through its other surface with a plasticized cellulose nitrate to form a highly flexible impregnation.

2,183,643. Manufacture of cellulose. Henry Dreyfus, London, England. Filed May 5, 1937. 6 claims. (Cl. 92-9). In the nitric acid process the acid is admixed with at least 10 times the weight of the material of an aqueous lower fatty acid of concentration between 15 and 75 per cent.

2,183,711. Method of treating paper. Francis De Witt, assignor to Pervel Corporation, New York, N. Y. Filed Jan. 7, 1938. 4 claims. (Cl. 91-68). The process of treating paper to render it soft and flexible which consists of the use of 72 to 80 fluid ounces of water and about 28 fluid ounces of a paper softening agent such as water-soluble stable polyhydroxy alcohols and ethers and esters of the alcohols and 14 to 16 ounces av. of mineral filler capable of adsorbing the paper softening agent.

2,183,736. Compositions prepared from amylaceous substances. Hans F. Bauer, assignor to Stein, Hall Manufacturing Company, Chicago, Ill. Filed Jan. 14, 1938. 11 claims. (Cl. 134-23.4). A remoistening adhesive formed from a dispersed amylaceous substance, urea and an alkali methyl acetate.

2.183.811. Electrical insulation material. Edward C. Homan, assignor to Irvington Varnish & Insulator Co., Irvington, N. J. Filed Sept. 20, 1938. 3 claims. (Cl. 154-2.6). A fabric coated with waterproofing material and on its external side with a thermoplastic electrical insulating compound, of high fire- and waterproof characteristics.

2,183,858. Sized paper. Joseph A. Warren, assignor to S. D. Warren Company, Boston, Mass. Filed Jan. 27, 1937. 4 claims. (Cl. 92-40). An aikaline filled, uncoated paper, surface sized with a soya bean protein size.

2,183,869. Machine for producing molded fibrous pulp articles. Walter H. Randall and Fred C. Harper, assignors to The Canal National Bank of Portland, Portland, Maine. Filed May 7, 1937. 8 claims. (Cl. 92-56).

2,183,927. Container fabricating machine. Julius E. Wollenweber, assignor to The American Paper Bottle Company, Toledo, Ohio. Filed Oct. 29, 1937. 14 claims. (Cl. 93-53).

2,183,930. Emery board and assembled unit of the same. Marshall T. Brekke, assignor to Northam Warren Corporation, New York, N. Y. Filed July 1, 1938. 1 claim. (Cl. 51-185). A non-elastic sheet is coated with abrasives on both sides, a protective paper sheet is superimposed thereon and the sheets die-cut.

2,183,965. Method of making shingles. John W. Ledeboer, assignor to Keasbey & Mattison Company, Ambler, Pa. Filed March 9, 1937. 1 claim. (Cl. 92-54).

2,184,002. Process for the manufacture of casein. Lawrence C. Pagel, Madison, Wisconsin. Filed Aug. 29, 1938. 5 claims. (Cl. 260-120). An acid process.

2,184,077. Decalcomania transfer. Frank Hart, Los Angeles, Calif. Filed June 20, 1938. 10 claims. (Cl. 41-33).

2,184,139. Laminated thermoplastic insulation material. George R. Cunnington, assignor to Woodall Industries Incorporated, Detroit, Mich. Filed Jan. 7, 1937. 3 claims. (Cl. 154-44). An asphalt sheet.

2,184,140. Laminated thermoplastic insulation material. George R. Cunnington, assignor to Woodall Industries Incorporated, Detroit, Mich. Filed Feb. 23, 1937. 10 claims. (Cl. 154-2).

2,184,189. Paper making apparatus. Charles Willmott Howard, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed April 28, 1937. 8 claims. (Cl. 15-93). A series of blades for removing surface liquid from a traveling web of material.

2,184,233. Apparatus for making paper bags. Fred J. Coty, assignor of one-third to Albert Barney and one-third to Oliver D. Horton, Niagara Falls, N. Y. Filed May 13, 1936. 6 claims. (Cl. 93-12).

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2,184,293. Abrasive. Donald E. Edgar and Harry G. Stauffer, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Oct. 8, 1936. 10 claims. (Cl. 51-280). The abrasive is bound to the sheet material by a coating consisting of a substantial amount of the resinous reaction product of urea, formaldehyde and an aliphatic monohydric alcohol.

2,184,307. Manufacture of paper. Louis Leonard Larson, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Sept. 28, 1936. 2 claims. (Cl. 92-21). In the manufacture of greaseproof paper the pulp is mixed with size solution containing deacetylated chitin as the film-former, an aqueous solution of an acid swelling agent is added which swells the precipitated film-former without parchmentizing the fibers and stopping the action of the swelling agent while the film-former is in a highly swollen state but before it has been dissolved to the sol stage.

2,184,312. Manufacture of paper. Warner J. Merrill, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed July 6, 1936. 4 claims. (Cl. 92-21). In the manufacture of greaseproof paper, deacetylated chitin is precipitated on the pulp, the pulp is formed into a sheet and dried and the chitin is swollen by surface sizing the paper with size solution in aqueous medium of deacetylated chitin.

2,184,348. Coating apparatus. Henry P. Kirchner and Raymond C. Benner, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Oct. 27, 1932. 7 claims. (Cl. 91-18). Apparatus for the manufacutre of granular coated webs using a pair of magnet poles.

2,184,477. Apparatus for carrying out the bleaching of bast fibers. Philipp Siedler, Erich Kayser, Helmuth Korte and Wilhelm Waibel, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Oct. 27, 1937. 2 claims. (Cl. 68-189). An apparatus for the chlorinating and bleaching of bast fibers, such as linen, hemp or the like.

2,184,619. Shingle making machine. Arthur G. Leonard, Jr., assignor to The Lehon Company, Chicago, Ill. Filed July 3, 1936. 5 claims. (Cl. 92-67).

2,184,622. Manufacture of tanning agents. Gustav Mauthe and Hermann Noerr, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed May 5, 1938. 5 claims. (Cl. 149-4.1). A condensation product of lignosulphonic acid.

2,184,938. Preparation of pigment compositions. Sanford S. Cole, assignor to National Lead Company, New York, N. Y. Filed Aug. 7, 1937. 6 claims. (Cl. 134-58). A thermally stable solid solution of titanium dioxide in zinc orthotitanate.

2,185,049. Sensitizing coating machine. George C. Beidler, Rochester, N. Y. Filed Nov. 30, 1937. 29 claims. (Cl. 271-2.2).

2,185,087. Method of drying vulcanized fiber sheets. Norman G. Jones, assignor to Continental-Diamond Fibre Company, Newark, Del. Filed June 27, 1938. 9 claims. (Cl. 34-24). A preliminary drying of the interior of the sheet while concentrating an aqueous moistening agent at the side edges thereof.

2,185,110. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Sept. 21, 1939. 18 claims. (Cl. 134-12). A substantially non-aqueous liquid coating composition comprising zein and a substantially anhydrous solvent.

2,185,111. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 7 claims. (Cl. 134-12). A substantially non-aqueous liquid coating composition comprising a solution of zein in an anhydrous mixture.

2,185,112. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 8 claims. (Cl. 134-12). A substantially non-aqueous liquid coating composition comprising a solution of zein in an anhydrous mixture of solvents.

2,185,113. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 8 claims. (Cl. 134-12).

2,185,114. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 7 claims. (Cl. 134-12).

2,185,115. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 11 claims. (Cl. 134-12).

2,185,116. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 8 claims. (Cl. 134-12).

2,185,117. Zein solution and coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Oct. 11, 1939. 9 claims. (Cl. 134-12).

2,185,118. Substantially nongelling zein coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Jan. 28, 1938. 11 claims. (Cl. 134-12). A solution of 1 part of zein and 3 parts of diethyleneglycol containing not in excess of 5 per cent of water.

2,185,119. Substantially nongelling coating composition of zein in closed-chain alcohols. Roy E. Coleman, assignor ot The Zein Corporation of America, Chicago, Ill. Filed Jan. 28, 1938. 14 claims. (Cl. 134-12). A composition containing 1 part of prolamine and 3 parts of a solvent boiling over 300 deg. F.

2,185,120. Substantially nongelling coating composition of zein in diacetone alcohol. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Feb. 1, 1938. 7 claims. (Cl. 134-12). One part of prolamine in 3 parts of diacetone alcohol.

2,185,121. Heat hardening coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Nov. 30, 1937. 11 claims. (Cl. 260-6). A solution of a prolamine and a water-insoluble carbamide-aldehyde resin dispersed therein.

2,185,122. Zein containing coating compositions. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed July 18, 1938. 19 claims. (Cl. 260-6). A solution of a prolamine and a partially reacted resinous polyhydric alcohol-organic acid ester.

2,185,123 Process of producing stable zein solutions with auxiliary solvents. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Aug. 9, 1937. 16 claims. (Cl. 134-12). A solution of zein in alcohol containing lacquer solvents and lacquer plasticizers.

2,185,124. Coating composition. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Aug. 9, 1937. 2 claims. (Cl. 134-12). A solution of zein in an alcohol.

2,185,125. Method of coating printed surfaces and article formed thereby. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Nov. 22, 1937. 10 claims. (Cl. 91-67.9). The printed surface is coated with a zein varnish capable of drying to a hard, transparent film.

2,185,126. Coated article and method of forming the same. Roy E. Coleman, assignor to The Zein Corporation of America, Chicago, Ill. Filed Nov. 22, 1937. 9 claims. (Cl. 91-68). Paper carrying a plurality of coating layers, one of which is a priming coating formed from a liquid zein composition.

Microdissection of Paper Pulp Fibers

By Charles W. Hock[1] and William Seifriz[2]

Abstract

After boiling in water and subsequently treating with phosphoric acid, the fibers of seven kinds of paper pulp were examined microscopically and handled with microdissection needles.

A typical fiber consists of many fine fibrils running parallel with the axis of the fiber. These fibrils are wrapped by an outer winding encircling the fiber as a whole, and bordered by an inner winding which subtends the lumen of the fiber.

Balloon formation is the result of an uneven weakening of the interfibrillar forces of the outer winding, thereby allowing the longitudinal fibrils to push through.

The breaking strength of paper pulp is determined, in part, by fiber structure. The strength of wood fibers is due primarily to many longitudinal fibrils. This is augmented by an outer and inner fibrillar winding.

Various structural details of paper pulp fibers can be determined by direct microscopic examination. This method, usually involving the use of stains, chemical agents, and different types of lighting, reveals much of the visible fiber structure. However, the question often arises as to whether the structures seen by this means are real or artifact. For instance, are the fibrils, so clearly revealed by both light and dark field illumination, real structures, or due simply to surface irregularities or diffraction phenomena? A micromanipulator can be of invaluable aid in such cases. The instrument makes possible the accurate control of fine glass needles, whereby fibers can be flattened, stretched, pulled apart, or otherwise handled so as to clarify details, *(1)*. The present paper deals with structural details of paper pulp fibers as determined by microscopic observation in conjunction with micromanipulative technique.

The following kinds of sheet pulp were kindly supplied by Dill & Collins, Inc., of Philadelphia:

Loblolly pine:	an unbleached kraft pulp
Weyerhaeuser:	a bleached sulphite pulp produced on the west coast
Cellate "B":	a purified bleached kraft pulp
Kexholm:	an unbleached sulphite pulp produced in Finland
Kingsport:	a soda pulp produced from southern wood
Penobscot:	a soda pulp manufactured from northern hardwood
Esparto:	a soda pulp produced from Esparto grass

Each of these pulps was put into boiling water for two hours to remove the air and to soften the cell walls. Some of the wet fibers were placed on a glass slide, the excess water removed by blotting, and several drops of 85 per cent phosphoric acid added. The fibers were then examined microscopically and probed with microdissection needles.

When given the acid treatment, loblolly pine, Weyerhaeuser, Cellate "B", and Kexholm pulps respond similarly, clearly revealing their fibrillar nature. Innumerable fibrils of small diameter run the length of the fiber, Fig. 1, d and e. An outer horizontal wrapping of fibrils encloses the longitudinal fibrils within. In many cases balloon-like structures appear where the longitudinal fibrils bulge through the outer winding, Fig. 1, c. These balloons may be regularly

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a b c d e

FIG. 1.

Photomicrographs of Cellate "B" Fibers after Boiling in Water and Treating with 85 Per Cent Phosphoric Acid. a. Fiber after Treatment, Showing Fibrillar Nature of the Outer Winding. Magnification 100 ×. b. Fiber Showing Individual Fibrils of the Outer Winding, which is Clumped at "Nodes". Note That the Outer Winding Is Continuous from One "Node" to Another. Magnification 450 ×. c. Typical Balloon Formation. The Longitudinal Fibrils and the Outer Winding Are Faintly Visible. Magnification 450 ×. d. Fiber Showing the Inner Winding and the Longitudinal Fibrils. That Portion of the Fiber at the Upper End of the Photomicrograph Is Intact, Not Having Been Affected by the Acid Treatment. Magnification 450 ×. e. The Inner Winding and the Longitudinal Fibrils of a Single Fiber. Magnification 450 ×.

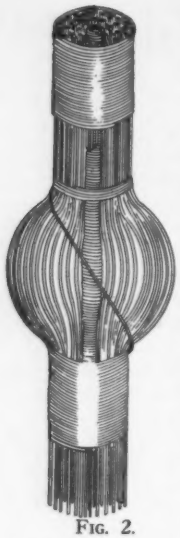

FIG. 2.

or irregularly placed along the axis, probably depending upon how uniformly interfibrillar forces are weakened by the treatment. Due to balloon formation the outer winding becomes clumped at "nodes", which, with microneedles, may be pulled apart into fine, almost invisible strands of the same dimensions as the longitudinal fibrils, Fig. 1, b. The fibrils of the outer winding are essentially like those which run longitudinally. In those fibers which do not yield balloons, the outer winding is often difficult to observe because the fibrils are so fine and uniformly distributed. The arrangement of the longitudinal fibrils permits them to separate more readily than those of the outer winding. The longitudinal fibrilae are difficult to observe owing to their extremely small diameter, yet they can be separated with microneedles and their presence in great numbers thus demonstrated. They can also be stretched between the needles of a micromanipulator.

In most cases the inner lumen of the fiber is easily discernible. Closer examination reveals the presence of a horizontal winding which forms the boundary of the lumen, Fig. 1, d and e, just as the outer winding forms the boundary of the fiber as a whole. A fiber, therefore, consists of an outer horizontal winding of fibrils, many longitudinal fibrils running along the axis of the fiber and making up its bulk, and an inner fibrillar winding marking the limits of the lumen, Fig. 2. That these structures are real and not artifacts has been substantiated by probing the fibers with needles mechanically controlled by a micromanipulator.

Kingsport and Penobscot pulps were only slightly affected by the acid treatment, but sufficiently so to give evidence of their fibrillar nature. The fibrils did not separate from one another easily, nor were balloons formed except in a few cases. At the broken ends of fibers the presence of an outer horizontal winding and of longitudinal fibrils was most easily seen. The actual fibrils of an inner winding could not be detected in these two pulps, but the central core or lumen was often plainly visible, and appeared to have a crenated margin, such as would exist if an inner winding were present. Very likely the fibrillar structure of Kingsport and Penobscot fibers is essentially the same as the four types already described.

Esparto fibers yielded few balloons when given the acid treatment, but transverse and spiral wrappings appeared in abundance. Although there was evidence of a central core, an inner winding could not be seen. Since the average diameter of Esparto fibers was only 1.6 μ, such a winding, if present, might easily lie below the limit of microscopic visibility.

The experimental findings here reported give further evidence in support of the fibrous structure of natural cellulose, and in this respect fully agree with the conclusions of Ritter *(2)*.

Literature Cited

(1) Seifriz, W., and Hock, C. W. The structure of paper pulp fibers. *Paper Trade J.* 102, no. 19: 36-38 (May 7, 1936); *C. A.* 30: 5032; *B. I. P. C.* 6: 397; *T. S.* 103: 235.

(2) Ritter, G. J. The morphology of cellulose fibers as related to the manufacture of paper. *Paper Trade J.* 101, no. 18: 92-100 (Oct. 31, 1935); *Tech. Assoc. Papers* 19: 435-443 (1936). 24 references.

Papermaking and Containers Features

Excellent programs have been arranged for the annual meeting of the Technical Association of the Pulp and Paper Industry by the Forming and Finishing and Container Committees. Among the papers to be presented are the following:

CONTAINER SESSION

1. Bending Tests of Corrugated Boards by T. A. Carlson.
2. The A.S.T.M. Container Testing Program by Don L. Quinn.
3. Adhesives Symposium
   a. How the Properties of Adhesives are Controlled by the Properties of Paper Surfaces, by F. Camp-Campins.
   b. The Evaluation of Strength Characteristics of of Corrugated Boxes, by D. M. Hawley.
   c. Influence of Paperboards and Adhesives on the Strength Properties of Corrugated Fiberboards, by D. W. McCready.
   d. Performance of Sodium Silicate Adhesives in the Manufacture of Corrugated Fiberboards, by F. R. Boller, J. E. Lauder, and R. Morehouse.

PAPERMAKING SESSION

1. The Stream Flow Vat System, by P. H. Goldsmith.
2. The Dieckbrader Vacuum Deckle for Cylinder Machines, by A. Yraola.
3. Effect of Alum on Sheet Properties, by A. Kelly, F. A. Simmonds and P. K. Baird.
4. The Relation of the Strength Properties of Multi-ply Paper Board to the Bonding Between Plies, by D. S. Brown.
5. The Relation Between Sheet Strength and Fiber Surface Conditions, by H. P. Dixon, Jr.
6. Consistency Regulators, by Frederick Wierk.

All meetings will be held at the Roosevelt Hotel, New York, N. Y., on February 19-22, 1940.

Emerick Made Assistant Sales Manager

The Johnston & Jennings Company, Cleveland, Ohio, has announced the appointment of Robert H. Emerick as assistant sales manager of its Stowe Stoker Division. Mr. Emerick was graduated from the U. S. Naval Officers' Training School at the University of Pennsylvania, in 1919. After serving in the Navy, he joined the Philadelphia Electric Company as a mechanical engineer, and spent 14 years in power plant design, testing, and district steam sales, also as a technical appraiser to the U. S. Federal Court on a district steam utility receivership. He joined the Phoenix Engineering Company Division of the Electric Bond and Share Company in 1937, as a mechanical engineer on projects in China and South America. He comes to Johnston & Jennings directly from the Henry Vogt Machine Company where he has been in charge of boiler sales in the New York and New England territories for the last eighteen months.

Mr. Emerick is the author of numerous engineering and engineering sales articles which have appeared in various technical and trade publications, and brings to his new work a wide experience in steam generation and mechanical stokering.

The Chemical Nature of Douglas Fir Lignin*

By E. B. Brookbank[1] and F. E. Brauns[2]

Abstract

Six derivatives were prepared from the lignin of Douglas fir heartwood and sapwood, and their analyses were compared with those of similar compounds prepared from sprucewood. The differences found between the three types were so small that they make chemical differences in their composition, other than polymerization and isomerism, improbable.

The wide differences observed in the ease with which various wood species may be reduced by the sulphite pulping process have suggested the possibility that lignin may occur as different chemical individuals in the various wood species. A number of investigators have already discussed this possibility. Bailey *(2)* suggests that the lignin of Douglas fir differs from that of spruce only in the degree of polymerization, and Beuschlein *(3)* reports that the increased difficulty in pulping Douglas fir with soda base sulphite liquor can only be attributed to differences between the lignin of this species and that of spruce. Brookbank *(4)* found that, whereas Douglas fir may be satisfactorily pulped by the usual sulphite process, the rate at which the pulping proceeds is much slower than in the case of spruce or western hemlock. Further, the heartwood of Douglas fir was more difficult to reduce than the sapwood.

In an attempt to throw light onto the chemical nature of Douglas fir lignin, a series of derivatives from both the sapwood and heartwood of Douglas fir were prepared for comparison with a similar set of lignin derivatives prepared from sprucewood. If significant differences could be established between the lignins of the two species, it would aid materially in accounting for the differences in behavior which have been observed *(2, 3, 4)*.

Experimental Procedure

Wood Preparation.

Sawdust from both the sapwood and the heartwood of Douglas fir (*Pseudotsuga taxifolia* Britt.) was ground to pass a 40-mesh screen and be retained on a 60-mesh screen. The wood meal so prepared was then extracted with the constant boiling mixture of alcohol and benzene (1:2) until 5 cc. of the solvent (in contact with the wood meal) left practically no residue on evaporation. The extraction was carried out in a large Soxhlet extractor, as much as 300 g. of wood meal being treated at one time. The extracted wood meal was then air-dried and placed in moisture-tight Mason jars pending its use for the preparation of the lignin compounds.

Sulphuric Acid Lignin.

The lignin residue from the determination of lignin in the analysis of the wood was saved as sulphuric acid lignin. This was isolated according to the Forest Products Laboratory method. A methoxyl determination was made on this lignin, using the method of Viebock and Schwappach as modified by Clark *(6)*. The following data were obtained:

	Douglas Fir		
	Sapwood	Heartwood	Spruce
Yield, per cent	29.4	28.6	27.6
Methoxyl, per cent	14.0	14.4	14.8
Ash, per cent	0.52	0.48	0.55

As may be seen, the yield from the various types of wood is not significantly different. This may also be said of the methoxyl and ash values.

Willstätter Lignin.

Willstätter lignin was prepared from both heartwood and sapwood by the method of Kalb, Liser, et al. *(8)*. Ten grams of the wood meal were treated with 200 cc. of hydrochloric acid (specific gravity 1.222 at 0 deg. C.) at a temperature of 1 to 5 deg. C. The suspension was shaken vigorously from time to time over a period of 2 hr., the temperature being allowed to rise to that of the room during this period. The mixture was then diluted with 65 g. of water in the form of finely cracked ice and allowed to stand at room temperature for eighteen hours. At the end of this interval, another 65-g. portion of water was added, and the lignin was filtered off on a Büchner funnel. The precipitate was washed with 200 cc. of hydrochloric acid (1:1), followed by a thorough washing with water. For purification, the lignin was boiled in 200 cc. of water with the gradual addition of sodium carbonate until the supernatant liquor was neutral to litmus paper. The solution was removed by filtration. The precipitate was again treated with 200 cc. of boiling water for a 10-minute period and filtered. This last treatment with boiling water was repeated three times, and the product was then dried in a vacuum desiccator over sodium hydroxide and sulphuric acid. Methoxyl and ash determinations were made on the products with the following results:

	Douglas Fir		
	Sapwood	Heartwood	Spruce
Yield, per cent	31	30	25-30
Methoxyl, per cent	14.4	14.2	14.5-15.5
Ash, per cent	0.21	0.22	.....

Thioglycolic Acid Lignin.

Thioglycolic acid lignins from Douglas fir heartwood and sapwood were prepared according to the method of Holmberg *(7)*. Forty g. of the extracted wood meal were treated with a mixture of 30 g. of thioglycolic acid and 400 cc. of 2 *N* hydrochloric acid. The mixture was heated on a boiling water bath for a period of 7 hr.; at the end of this time the sapwood mixture had taken on a very red color, and the heartwood was a light orange. Spruce under these condi-

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* A portion of a thesis submitted by E. B. Brookbank in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wisconsin, June, 1937. Another portion of this thesis appeared in *Paper Trade J.* 108, no. 7:30-38 (Feb. 16, 1939).

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tions showed only a very light buff color. The suspension was filtered and washed thoroughly with distilled water, and the filter cake was air-dried. The sapwood meal had become a dark red; the heartwood, a light orange. The air-dried material was then mixed with 200 cc. of ethyl alcohol and allowed to stand for 48 hours. The alcohol was then filtered off. The filtrate from the sapwood had a bright orange color; that from the heartwood, a light straw color. The filter cake was again air-dried, stirred with 400 cc. of distilled water containing 8 grams of sodium hydroxide, and allowed to stand overnight. This treatment dissolved the lignin compound. The pulp was filtered off and washed with distilled water until the volume of liquid reached 1 liter. The filtrate was acidified with 20 cc. of concentrated hydrochloric acid, and the precipitated lignin was removed by filtration, and washed with distilled water until it was acid free as shown by Congo red paper. The filtrate from the sapwood lignin was yellow in color, that from the heartwood was almost colorless. The crude sapwood thioglycolic acid lignin was a deep red color; that from the heartwood, a light buff.

The crude lignins were purified by dissolving them in dioxane, filtering, and precipitating the dioxane solution in ether. The precipitated lignins were washed twice with ether and twice with petroleum ether. The sapwood compound was a dull red powder; the heartwood thioglycolic acid lignin was obtained as a cream-colored powder.

Since the dioxane solutions of the crude thioglycolic acid lignins appeared to be of widely different viscosities, it was thought that viscosity measurements of the dioxane solutions might give a rough idea of the relative degree of polymerization of the two lignins. For this reason, the viscosities of 4 per cent solutions of both heartwood and sapwood thioglycolic acid lignins in dioxane were determined by means of an Ostwald tube. However, the purified compounds were found to have identical viscosities, and no conclusions could be drawn from these data.

Analysis of the thioglycolic acid lignins, which were found to be ash-free, yielded the following data:

	Douglas Fir		Spruce
	Sapwood	Heartwood	
Yield, crude, per cent.....	27.5	27.0	30
Yield, purified, per cent....	24	24	25.5
Found: OCH_3, per cent....	11.5	11.8	11.7 (*1*)
C, per cent.....	55.1, 55.2	55.2	54.6
H, per cent.....	5.50, 5.35	5.53	5.3
S, per cent.....	9.2, 9.1	8.95, 8.6	10.1

Calculated for $(C_{31}H_{32}O_8(OCH_3)_3(OH)_3(HSCH_2COOH)_4$ as given by Ahlm and Brauns (*1*): OCH_3, 12.5; C, 53.2; H, 5.5; S, 10.1 per cent respectively.

Phenol Lignin.

Phenol lignins were prepared from Douglas fir heartwood and sapwood according to the procedure described by Buckland, Brauns, and Hibbert *(5)*. Pure anhydrous phenol (750 g.) was placed in a 1-liter Claisen flask provided with a dropping funnel and a mechanical stirrer. The phenol was heated to 80 deg. C. and 80 g. of the wood meal added. An anhydrous ether solution (135 cc.) of 5.4 g. of hydrogen chloride was added during a period of 10 minutes through the dropping funnel, the end of which was placed below the surface of the molten phenol. The mixture was stirred constantly during this time, and the temperature maintained between 80 and 90 deg. C. The color of the reaction mass changed gradually from a light yellow to a deep greenish black. This same color change was noted for both the sapwood and the heartwood preparations. At the end of ½ hr., the phenol was distilled off under reduced pressure, the temperature being slowly raised to 100 deg. C. The residue was a brownish black tar, which became brittle at room temperature. This tar was dissolved in 150 cc. of acetone and methyl alcohol (1:1) and the residual cellulose removed by filtration. The cellulose was washed thoroughly with methyl alcohol and acetone, and the washings were combined with the filtrate. The solution so obtained was concentrated, and any phenol which was present was removed by distillation under reduced pressure. The residue from this operation was dissolved in 150 cc. of the acetone-methyl alcohol solvent and the lignin precipitated by adding the solution dropwise, with vigorous stirring, to 4 l. of distilled water. The light gray solid which separated was filtered off and thoroughly washed with distilled water. The total yield of dry crude phenol lignin was 46 g. for the heartwood and 45 g. for the sapwood, equivalent to 57 and 56 per cent, respectively, of the original wood weight. Spruce, when treated as above, yields 67 per cent of a product having a methoxyl content of 6.4 per cent. The Douglas fir crude phenol lignins had methoxyl contents of 7.1 per cent for the heartwood product and 7.2 per cent for the sapwood product.

Fractionation of Crude Phenol Lignin.

The crude phenol lignins were separated into an ether-insoluble fraction (phenol lignin A) and an ether-soluble fraction (phenol lignin B) by the following procedure:

Isolation of Ether-insoluble Phenol Lignin A. Twenty g. of the crude phenol lignins were dissolved in 200 cc. of anhydrous, glycol-free dioxane, giving a very dark chocolate-brown solution. This was filtered and added dropwise to seven or eight times its volume of anhydrous ether with vigorous stirring. The lignin was precipitated as a fine, light-gray powder; the supernatant ether solution was dark reddish brown in color. It was then centrifuged, washed with three portions of dry ether and finally with two portions of petroleum ether. The ether-insoluble phenol lignin A was obtained as a very fine gray-colored powder. Methoxyl contents after the first precipitation were 10.2 per cent for the heartwood compound and 10.8 per cent for the sapwood derivative.

These compounds were subjected to a second purification as described above. The methoxyl contents after this step were 10.5 per cent for the heartwood phenol lignin and 10.7 per cent for the sapwood compound. The yields in each case were 65 per cent of the crude products. Analysis of the preparations showed the following:

	Douglas Fir		Spruce
	Sapwood	Heartwood	
Carbon, per cent.....	69.03, 69.42	69.06, 69.15	69.08
Hydrogen, per cent.....	5.89, 5.92	5.55, 5.51	5.87
Methoxyl (OCH_3), per cent	10.5	10.7	10.4

Calculated for $C_{31}H_{32}O_8(OCH_3)_4(OH)_2(OC_6H_5)_2 \cdot 3C_6H_5OH$, (1216.5): C, 69.00 per cent; H, 5.96 per cent; OCH_3, 10.2 per cent.

Isolation of Ether-soluble Phenol Lignin B. The dark-brown ether solutions remaining after the removal of the ether-insoluble fraction A were evaporated to dryness under reduced pressure to remove the last traces of dioxane. The residues were redissolved in ether, leaving a small amount of a tarry substance. The ether solutions were again evaporated

under reduced pressure to dryness, and the resultant tar dissolved in methyl alcohol. The lignin compounds were precipitated by dropping the methyl alcohol solutions into distilled water; the precipitates obtained were very fine tan powders. They were separated by filtration and washed with distilled water, dried in a vacuum desiccator over sodium hydroxide and sulphuric acid, and weighed.

The final products were obtained in identical yields of 35 per cent of the crude phenol lignins. Methoxyl contents were 4.4 per cent for both the sapwood and heartwood compounds. Calculated for $C_{42}H_{32}O_6(OCH_3)_5(OH)_4(OC_6H_5).15C_6H_5OH$ (2358.4): OCH_3, 5.4 per cent.

The methoxyl content of phenol spruce lignin B was found to be 5.4 per cent. However, this deviation from the values found for the Douglas fir preparations may not be significant, inasmuch as the method of purification described above was not the same as that used for the spruce compound, which was precipitated from a dioxane solution by dropping it into dry petroleum ether.

Acetylation of Ether-insoluble Phenol Lignin A. Five g. of phenol lignin A were dissolved in 25 cc. of dry pyridine and 15 cc. of acetic anhydride added. The dark reddish brown solution was allowed to stand at room temperature for 36 hours, after which it was poured over finely cracked ice. After the ice had melted, the light-brown precipitate was filtered off, washed free from pyridine and acetic acid, and dried. The following analytical data were obtained:

	Douglas Fir		
	Sapwood	Heartwood	Spruce
Yield, g.	5.5	5.5	6.3
Carbon, per cent	67.57, 67.53 66.96	67.23, 67.06	66.67
Hydrogen, per cent	5.49, 5.51 5.20	5.47, 5.19	5.40
Methoxyl (OCH_3), per cent	8.4	8.6	7.9
Acetyl ($COCH_3$), per cent	24.6	24.3	23.0

Calculated for $C_{42}H_{32}O_6(OCH_3)_4(OCOCH_3)_5$ $OC_6H_5.3C_6H_5OCOCH_3$, (1552.7): C, 66.46 per cent; H, 5.66 per cent; OCH_3, 8.0 per cent; $COCH_3$, 22.2 per cent.

Methylation of Ether-insoluble Phenol Lignin A with Diazomethane. Two g. of phenol lignin A were dissolved in 25 cc. of dioxane, and a slow current of diazomethane (prepared by slowly dropping 12 cc. of a sodium glycolate solution, containing 6 per cent sodium, into 6 cc. of nitrosomethylurethane) led into the solution. After about an hour, the evolution of nitrogen was observed, and the solution became noticeably lighter in color.

The reaction mixture was allowed to stand overnight, and a small amount of the solution was taken for a methoxyl determination. This sample was filtered to remove a small amount of a gelatinous precipitate (presumably a polymer of diazomethane) and precipitated by dropping into dry ether. The precipitate was washed twice with ether and twice with petroleum ether. Methoxyl contents after this first methylation were 20.2 per cent and 20.0 per cent for heartwood and sapwood compounds, respectively.

The main portion of the reaction mixture was again methylated, using half as much diazomethane as in the first methylation, and after standing overnight, was heated to 50 deg. C. for 10 min., filtered, and precipitated as described above. Methoxyl contents after the second methylation were 21.7 and 21.8 per cent, respectively, for the heartwood and sapwood compounds. A third methylation of the heartwood product did not give a higher methoxyl content; hence it was concluded that these derivatives were completely methylated with respect to diazomethane after two methylations. The following analytical data were obtained:

	Douglas Fir		
	Sapwood	Heartwood	Spruce
Carbon, per cent	69.81, 70.19 70.66	70.09, 70.13	70.49
Hydrogen, per cent	6.17, 6.34 6.31	6.50, 6.30	6.37
Methoxyl (OCH_3), per cent	21.8	21.7	21.6

Calculated for $C_6H_{32}O_6(OCH_3)_6(OH)_3(OC_6H_5).3C_6H_5OCH_3$, (1286.6): C, 70.0; H, 6.42; OCH_3, 21.7 per cent, respectively.

Discussion

It may be seen from the data presented in the foregoing section that no differences exist between the lignin of Douglas fir heartwood and that of the sapwood. The data prove conclusively that the two lignins are at least isomers or polymers, if not identical. In view of the number of derivatives prepared and the number of analyses made on them, it would be a most unusual coincidence if a difference (other than that of degree of polymerization or structural isomerism) could exist between the two.

Similarly, although the agreement between the values for the Douglas fir lignins and those for the same compounds prepared from spruce is not as close as for the two Douglas fir types, the differences observed are not sufficient to indicate that native Douglas fir lignin differs from native spruce lignin. The one point of greatest difference observed, the methoxyl contents of the ether-soluble fractions of the phenol lignins, is of no significance, because two different methods were employed in purifying these compounds. Referring to the type formula given for ether-soluble phenol lignin B, it will be noted that fifteen loosely bound phenol groups are included, giving a theoretical methoxyl content of 5.4 per cent. It is possible that the variation in methods of purification of these compounds has resulted in a change in the number of these phenol groups, thus accounting for the lower methoxyl contents of the Douglas fir derivatives. The same statement made with respect to the lignin of Douglas fir heartwood and sapwood may also be made in connection with the lignin of spruce and Douglas fir. The data obtained on six independent preparations show no difference between the two lignins. Therefore, the lignin of Douglas fir is either an isomer or a polymer, or it is identical with the lignin from spruce.

Literature Cited

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(5) Buckland, I. K., Brauns, F., and Hibbert, H., *Can. J. Research* B13:61-77 (1935).
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Change in Trade Rayonier Names

Rayonier Incorporated, with headquarters in San Francisco, and general sales offices in New York City, announce the following changes in the names of its paper grades of pulps: Olympic Hi-White, Raybrite; Grays Harbor Bond, Raybond; Grays Harbor Select, Rayselect; Olympic Standard, Raybook; B-700, Raywhite.

Rayonier manufactures four types of dissolving pulps: Purayonier, Hicolor, Rayonier and Cellunier.

Existence and Nature of Fiber Membranes*

By H. F. Lewis [1], F. E. Brauns [2], and M. A. Buchanan [3]

Abstract

1. A method has been set up for isolating the skin-like bodies left behind as a result of careful swelling of pulp fibers with cuprammonium hydroxide.

2. It has been demonstrated that the cellulose fraction of the fiber is peptized by cuprammonium hydroxide. Further, the action of pectic solvents (with the exception of dilute acids) has little or no effect on the viscosity of a solution of such treated pulps in this solvent.

3. Raw kraft pulps containing up to 22 per cent lignin have middle lamellar lignin on the outer walls; when the lignin content is reduced to 8.6 per cent, this has largely disappeared as is evident from the swelling behavior. The residual lignin in a kraft pulp containing 8.6 per cent lignin appears to be associated with the amorphous materials separating the cambial layer from the secondary wall and separating the various layers of cellulose in this secondary wall. It does not seem probable that these membranes represent a continuous skin having a physiological function; rather it would appear that they have resulted from a different chemical activity at the time of their deposition or they had reached their location by infiltration.

4. The residues isolated from unbleached sulphite pulps are more than half lignosulphonic acid, with much smaller amounts of carbohydrates. The hydrolyzed residues from the separation of the lignosulphonic acid are in part reducing and in part non-reducing sugar.

5. The residues isolated from bleached sulphite pulps are copper compounds of carbohydrate derivatives. One-third of the residue is copper; 97 per cent of the remainder can be determined after hydrolysis as reducing sugar. The carbohydrate after removal of the copper forms a white gel, which on drying yields a white starch-like powder having a carbon content of 44.2 per cent and a hydrogen content of 6.25 per cent.

6. Purification of the bleached pulp with hot 1 per cent alkali reduces the amount of this residue from 1 per cent to 0.1 per cent. The viscosities of the pulps before and after this extraction are much the same.

7. A very highly purified wood pulp containing 0.70 per cent pentosan, a copper number of 0.049 and 99.1 per cent alpha-cellulose, swells as though there was no cementing substance between the cellulose layers in the secondary wall. This pulp contained practically no cuprammonium-insoluble material nor could it be made to yield paper after beater treatment.

8. Work is being continued to determine why highly purified wood pulps have poor papermaking qualities and the effect of the cuprammonium insoluble residues on the aging qualities of such pulps.

Introduction

A sheet of paper is an extremely complex system consisting of interlocked fibers, held together in part by an intermeshing of fine fibrous structures resulting from the fraying of the fiber and in part by the cementatious material liberated or formed during the beating operation. Fundamental information is not yet sufficiently complete to enable us to assign the part played by each component of the complex fiber structure itself.

Much attention has been paid in the past to the various chemical constants of the pulps in the hope of developing some means for evaluating chemically their potential physical values. This has not been completely successful, although certain generalities can be observed. For example, a wood pulp freed from pentosans develops strength with extreme difficulty in the beater. Whether this is due to the absence of pentosans or to a change in the colloidal structure of the pulp as the result of the process used to remove the pentosans cannot be stated. Likewise, pulps may be produced with similar chemical constants but with different physical characteristics.

The reason for this apparent lack of correlation has intrigued the interest of many investigators. Without doubt, many factors contribute, but when as many variables as possible are eliminated in testing, dissimilarities still exist.

We have been particularly interested at The Institute of Paper Chemistry in the general relation between chemical composition, fiber structure, and physical behavior. Particularly have we been interested in the part played by the minor fiber constituents, and this portion of the program has been financed in part by two grants made by the Research Promotion Committee of the Technical Association of the Pulp and Paper Industry. One such constituent is the material which appears to form the limiting membrane in the balloon-like swellings resulting from the action of cuprammonium hydroxide and certain other swelling agents on certain types of fibers. This membrane appears to exist in part immediately beneath the transversely wound cambial layer in the wood fiber.

No attempt is made in this report to describe our work in chronological form. The method which we have followed for isolating this material involves solution of the major portion of the fibrous substance in cuprammonium hydroxide of either TAPPI specification or of A.C.S. strength. After the solution is complete, water is added to bring the strength of the solution, as regards cellulose, to about 1 per cent, although the exact conditions have varied somewhat and have been outlined in previous reports. The diluted solution is centrifuged at about 3500 to 4000 r.p.m., and the residues are washed first with fresh cuprammonium hydroxide, then with ammonium hydroxide until the wash liquor is colorless, and finally with water, alcohol, ether, and petroleum ether.

After the work had progressed for about a year,

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publications appeared which seemed to point to the possibility that in the case of cotton, at least, the cellulose itself was insoluble in cuprammonium hydroxide and the viscosities observed arose from the cementing material present. In the case of cotton, this cementing material could be removed by solution in pectic solvents.

Howells in our laboratory therefore carried out a long series of experiments in which pulps were extracted by various solvents in order to remove pectins and hemicelluloses. In only one case was there found to be any lowering of pulp viscosity by such extractions—contrary to the work reported on cotton; the one exception was dilute acid, and here the pulp was degraded chemically, as was evidenced by the change in chemical constants. Moreover, the amount of material insoluble in cuprammonium hydroxide was determined for 19 samples treated in different ways, and in almost every case the amounts of such materials ran between 1.0 and 2.0 per cent and not the 80 to 90 per cent to be expected had the cellulose not dissolved. In the case of two reagents, namely, 1 per cent sodium hydroxide and 1 per cent hydrochloric acid, the amounts of the insoluble residues decreased; both these reagents are active solvents for the hemicelluloses. Pulps extracted with these materials yielded about 0.1 per cent of insoluble residue.

One section of our work has dealt with the particular structures rendered soluble by cooking liquors. Richardson prepared a series of pulps by a kraft cooking procedure in which the lignin varied by stages from 22.2 per cent down to 8.6 per cent. Not until the pulp showed a lignin content of 15.9 per cent was there any appreciable ballooning; fairly complete removal of lignin from the primary wall surface was observed when the lignin content was 8.6 per cent. Incidentally, the maximum strength was observed at this point (*see* Table I). Such fibers formed balloons, although the size and evenness of the sphere were not to be compared with the ballooning of a well-cooked and bleached fiber of the same type.

Apparently, with alkaline pulps prepared as above, the amorphous layers separating the cellulose lamellae in the secondry wall are highly lignified, contributing greatly to certain of the strength properties of the pulp. As cooking (and delignification) proceeds beyond the region of 8 per cent, lignin is removed from the secondary wall together with some of the carbohydrate components, and the fiber is softened at the expense of strength.

TABLE IV.—THE CHEMICAL COMPOSITION OF THE CUPRAMMONIUM INSOLUBLE RESIDUES FROM THE UNBLEACHED SULPHITE PULPS DESCRIBED IN TABLE III

Cook	Residue on Pulp, per cent	Lignin in Residue, per cent	Methoxyl in Lignin, per cent	Sulphur in Lignin, per cent
I	1.3	56	9.7	3.4
II	2.2	47	11.3	4.2
III	2.0	59	11.9	4.2

Tests on Sulphite Pulps

In the case of sulphite pulps, unbleached pulps of much lower lignin content may have lignin both in the secondary wall and in the surface of the fiber. When cooking proceeds to the usual point, this residual lignin is largely in the secondary wall where it is present as lignosulphonic acid, in which form it adds very little to the physical characteristics of the pulp. Experiments have been very recently completed in our laboratories which demonstrate that the material insoluble in cuprammonium hydroxide in unbleached spruce sulphite pulps is largely lignosulphonic acid; in one pulp, this product was more than half lignosulphonic acid; in addition there was 14 per cent ash and 6.14 per cent reducing carbohydrates after hydrolysis. The above lignosulphonic acid contains 3.4 per cent sulphur and 9.7 per cent methoxyl; these values of course depend upon the extent to which the pulp has been cooked; milder cooking conditions and higher yield of pulp give a cuprammonium residue with the higher methoxyl value. The actual amount of such material in three pulps varied between 0.6 and 2.2 per cent. The experimental data on these pulps will be found in Tables II, III, and IV.

These residues are brownish in appearance and the inorganic constituents appear to be associated with the lignosulphonic acid rather than with the carbohydrates. It would appear that cellulose from unbleached sulphite pulp is completely peptized in cuprammonium hydroxide.

As the sulphite pulps are bleached and the lignin content reduced to an extremely small value, a significant change appears in the cuprammonium residues. They contain less than 2.1 per cent lignosulphonic

TABLE I.—THE PHYSICAL CHARACTERISTICS OF HIGH LIGNIN CONTENT KRAFT PULPS

Pulp	Lignin Content, per cent	Time to 250 cc. Freeness, minutes	Burst Factor, 250 cc. Freeness	Fold at 250 cc. Freeness	Apparent Density, 250 cc. Freeness	Stiffness	Porosity	Swelling Characteristics *
I	22.2	216	120	125	8.7	115	160	No ballooning—slight swelling
II	17.7	205	149	1000	10.5	125	300	No ballooning—somewhat greater swelling
III	15.9	210	153	1125	10.3	80	330	Few balloons—many swollen fibers
IV	12.7	180	150	1150	10.8	85	240	More balloons—few unswollen fibers
V	8.6	165	177	2400	12.0	65	580	Largely ballooning

* The swelling agent was cuprammonium solution containing 7.5 grams of copper and 100 grams of ammonia pellets.

TABLE II.—COOKING DATA ON UNBLEACHED SPRUCE SULPHITE PULPS

Cook	Moisture, per cent	Free SO_2, per cent	Liquor Ratio	Maximum Temperature, deg. C.	Maximum Pressure	Time at Maximum	Screened Yield, per cent	Screenings, per cent	$KMnO_4$ Number	Bleach Consumption
I	27.6	5.0	4.14	140	95	3	44.3	1.6	8.0	6.4
II	27.6	5.0	4.32	135	95	3	46.9	3.1	13.5	16.4
III	27.6	4.0	3.98	135	95	3	46.1	7.8	18.0	19.8

TABLE III.—CHARACTERISTICS OF UNBLEACHED SULPHITE PULPS

Cook	Time of Beating, minutes	Freeness 400			Viscosity	Pentosans	Copper Number	C. & B. Cellulose	Alpha-Cellulose	Lignin
		Burst	Tear	Apparent Density						
I	88	155	104	14.0	49.9	5.4	3.15	95.7	84.1	0.9
II	59	181	103	12.9	85.7	6.2	2.95	93.5	83.0	1.5
III	60	190	104	12.8	98.9	6.3	2.89	91.5	82.9	2.9

acid; in contrast they consist almost entirely of a carbohydrate portion and an inorganic portion which is largely copper—in fact the carbohydrate material has been so modified as to take up half of its weight as copper in the isolation with cuprammonium hydroxide. The copper content of three such preparations was 32.8, 32.2 and 30.3 per cent, respectively. When this copper is removed by the action of ammonium hydroxide followed by weak acid, the carbohydrate portion forms a white gelatinous mass which, on drying yields a white starch-like material containing 44.2 per cent carbon and 6.25 per cent hydrogen (cellulose contains 44.44 per cent carbon and 6.12 per cent hydrogen). On hydrolysis, this carbohydrate is found to be 97 per cent reducing sugar. It contains a large percentage of glucose and a smaller percentage of pentose sugars.

Qualitative chemical tests for mannose and fermentation tests for galactose indicated the absence of these sugars. It appears possible that some oxidation of the material may have taken place during bleaching—this is supported by the small but positive test for uronic acid groups.

When the above pulp is treated with hot 1 per cent sodium hydroxide, this carbohydrate fraction is removed in large part. For example, in one series of pulps, the bleached pulp, which contained 1 per cent of the residual material yielded after extraction less than 0.1 per cent.

The significance of the above experiments as they relate to the papermaking operation is not yet clear. Experiments are now in progress in our laboratories seeking to determine the reason for the loss of papermaking characteristics which wood pulps undergo as the result of an extensive purification. Is it because of the removal of a small amount of easily-hydrated polysaccharide which is associated with the primary wall of the fiber, or is it because of an actual modification in the cellulose? Other experiments now outlined deal with an investigation of the relation between these residues and the aging characteristics of a pulp or a paper.

As a final step in the process of purification, there is the wood pulp, already described[4], which has been purified almost to its ultimate point, so that its pentosan content was 0.70 per cent, its alpha-cellulose 99.1 per cent, and its copper number 0.049. This pulp failed entirely as a paper making material, for after 90 minutes in the beater, neither had the freeness dropped nor the stock hydrated. When this pulp was treated with cuprammonium solution, instead of ballooning as expected, the sleeve-like lamella of the secondary wall slipped out with apparent ease, one from the next, as though the amorphous membrane-like material had been completely removed. The amount of insoluble residue was almost negligible from 150 grams of pulp.

[4] Brauns, F. E., and Lewis, H. F., *Tech. Assoc. Papers* 20:368-370 (June, 1937); *Paper Trade J.* 105, no. 10: 35-37 (Sept. 2, 1937).

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Boards

Decorative Fiber Board. John A. Wiener and Frank A. Bromley, assignors to Johns-Manville Corporation. U. S. pat. 2,146,871 (Feb. 14, 1939).—A fiber board is formed including felted cellulose fibers, water and a sizing composition including at least a trace of sulphuric acid adapted to cause discoloration at high temperature. A face of the board is pressed with a metal die provided with surface irregularities to form similar desired surface irregularities in the fiber board and the die is maintained at a high temperature (100 degrees to 150 degrees C.) to cause discoloration of the fiber board in directly contacting portions of its face.—A.P.-C.

Mill Board Shoe Heels. Rudolf Kulula, assignor to 50 per cent of Edmund Moster. U. S. pat. 2,147,904 (Feb. 21, 1939).—Heels are formed of layers of highly porous mill board having the normal moisture content of about 10 per cent and having a specific gravity of 0.42 to 0.50, suitably impregnated with a resin.—A.P.-C.

Insectproof Board. Robert G. Quinn, assignor to International Paper Company. U. S. pat. 2,144,271 (Jan. 17, 1939).—Sheet material is formed from a fibrous pulp with which have been successively incorporated a rosin emulsion, zinc sulphate and dry arsenious oxide to form a product containing zinc resinate and arsenious oxide.—A.P.-C.

Method and Means for Sealing Paper Board Blanks. Samuel Bergstein, assignor to Edna M. Bergstein and Robert M. Bergstein. U. S. pat. 2,145,334 (Jan. 31, 1939).—Adhesive in film form is applied to portions of the blanks while the latter are travelling on a conveyor. While still in motion, the coated areas of the blanks are subjected to the action of radiant heat to render the adhesive tacky. The blanks are then folded into overlapping relation and the overlapping portions pressed together while the blanks are still in motion.—A.P.-C.

Composition Fiber Board Suitable for Use As Insulation Against Heat and Sound. Clements Batcheller. U. S. pat. 2,140,195 (Dec. 13, 1938).—A low-density, molded, porous product is produced by precoating pulp screenings with an asphalt emulsion, intermixing with bentonite in quantity at least sufficient to coat the asphalt-covered fibers, intermixing mineral fibers with the coated vegetable fibers, also intermixing additional quantities of bentonite and asphalt emulsion and water sufficient to form a plastic composition, and thereafter adding and intermixing a sufficient quantity of an aerated mixture of asphalt emulsion and size to reduce the composition to a light, fluffy consistency. The prepared composition may then be molded.—A.P.-C.

Process for the Manufacture of Bituminous Papers and Boards. C. A. Braun, Berlin Lichterfelde. Ger. pat. 654,631 (Dec. 17, 1935).—Suspensions of earth alkali hydroxides are added to the caseinate to be used, to the finished dispersion or to the paper stock, whereupon the dispersion after mixing with the paper stock, is precipitated upon the paper stock by means of alum or similar precipitation means.—J.F.O.

Hardboard Sheet Products. Wm. H. Mason, assignor to Masonite Corporation. U. S. pat. 2,140,189 (Dec. 13, 1938).—Fibrous wood or woody lignocellulose material, which contains the natural fiber incrustation, in relatively small pieces, is subjected to a heat treatment at a temperature of over 225°C. in presence of moisture at a pressure over 350 lb. per sq. in., and is then disintegrated. The time of disintegration and the extent of disintegration are regulated to convert the material into predominantly plastic condition with some content of water-soluble materials and with part of the lignocellulose material substantially without fibrous structure, while enough of the fibrous structure is left to enable felting the material into a wet-lap sheet from water. The material is pulped with water and felted into sheet from whereby the water-soluble materials content is substantially reduced. The sheet is then completely dried and is additionally heated to over 150° C. The sheet is then subjected to sufficient pressure to consolidate it into a dense hardboard product having a density of about 1 to 1.25.—A.P.-C.

Process for the Utilization of the Refuse in the White Water in Pulp or Ground Wood Mills. Hackmann & Co., Johannes. Finn. pat. 17,868 (Sept. 23, 1935).—The refuse material in the white water is mixed with peat and made into insulating board and molded into various objects.—J.F.O.

Machinery

Apparatus for Barking Wood. Tor Over Hillbom. U. S. pats. 2,137,451 and 2,137,452 (Nov. 22, 1938).—The logs are piled parallel to one another in a suitable container and are made to move in an inclined path from the lower to the upper part of the container by means of a series of travelling chains between which impellers project at intervals. Damming means are provided in the path of the upwardly moving logs for normally preventing them from passing out of the container at the upper ends of the chains; but these damming means are movable out of the path of the logs to permit the latter to be discharged from the container.—A.P.-C.

Cylinder Paper Machine. Herman L. Kutter, assignor to The Black-Clawson Co. U. S. pat. 2,141,273 (Dec. 27, 1938).—The end of the apron (over which the stock is delivered into the vat) nearest the cylinder mold terminates in a pivoted adjustable plate or blade which may be raised or lowered at will. The inner wall of the vat is provided at intervals with blades, baffles or corrugations.—A.P.-C.

Apparatus for Agitating and Disintegrating Pulp. Leslie Justice and Wm. D. Macgeorge. U. S. pat. 2,139,274 (Dec. 6, 1938).—The apparatus consists essentially of two opposed circular disks mounted upon separate shafts at an angle thereto for rotation in the same or opposite directions at equal or different speeds within a vat or tub adapted to contain the pulp. Preferably, the disks are rotated in opposite directions at equal speeds.—A.P.-C.

Apparatus for Treating Pulp. Kristen Andreas Thorsen, assignor to Paper and Industrial Appliances Inc. U. S. pat. 2,138,715 (Nov. 29, 1938).—A machine for the crushing and disintegration of pulp comprises two horizontal rolls pressed laterally against each other and mounted inside a hollow rotating feed cylinder, which continually lifts the stock having passed between the crushing rolls and feeds it back between them. This cylinder is driven at a sufficient speed so that the material leaving the press adheres under the effect of centrifugal force to the inner surface, from which it is detached by means of a scraper which rests against the highest generator of the cylinder.—A.P.-C.

Defibrating and Grinding Paper Pulp and Like Materials. B. N. S. Gregersten. Brit. pat. 496,266 (May 24, 1937).—A pulp disintegrator is claimed which is intended to effect the separation of the fibers with a rolling action, but with a minimum of cutting action.—A.P.-C.

Pulp Stock Agitating Apparatus. John A. Rosmait. U. S. pat. 2,135,261 (Nov. 1, 1938).—Recirculation of pulp stock is accomplished by means of a pump which has an intake terminating in an inverted end portion surmounting a sump in the bottom of the tank. Surmounting the sump and pump intake is a dome-shaped baffle held spaced above the floor of the tank, and extending outwardly toward the wall of the tank. Surmounting the dome-shaped baffle is a vertical standpipe, which is disposed directly underneath the discharge outlet of the pump and is provided with a number of relatively large apertures.—A.P.-C.

Specialties

Apparatus for Making Laminated Wrapping Papers. Dallas Grand, assignor to Canada Paper Company. U. S. pat. 2,136,739 (Nov. 15, 1938).—The invention provides an apparatus for making laminated wrapping papers In which the adjacent plies are bonded together by an interposed film of asphalt. To ensure more even and uniform distribution of the asphalt film, the coated surface of each sheet is passed over a cylindrical doctor rotating in a direction opposite to the travel of the sheet. The rotary doctor is arranged so that it may be adjusted to regulate the thickness of the asphalt coating on the sheet passing thereover. The doctor is also mounted to rotate in close proximity with a stationary scraper by which asphalt is continuously removed from the doctor and returned to the asphalt vat in which both the doctor and the scraper are mounted. Adjacent convolutions of the laminated sheet are prevented from adhering to each other when winding by passing the sheet before winding over rolls maintained at a temperature low enough to ensure solidification of the asphalt.—A.P.-C.

"Noiseless" Waterproof Paper. Luther B. Arnold, Jr., assignor to E. I. du Pont de Nemours & Co. U. S. pat. 2,142,986 (Jan. 10, 1939).—Paper is treated with an aqueous mixture of octadecyl alcohol or other aliphatic alcohol of 12 to 20 carbon atoms and a suitable water-soluble salt of a sulphated aliphatic alcohol of 12 to 20 carbon atoms, and thereafter with an aqueous emulsion of a wax in an aqueous solution of deacetylated chitin. The paper is thus rendered resistant to the flow of wax at temperatures above the melting point of the wax, and suitable for lining garments or for various other uses.—A.P.-C.

Moistureproof Wrappings. E. E. Halls. Food 8:183-185 (1939).—Methods of determining moistureproofness by determining loss of weight in a confined atmosphere of controlled temperature and relative humidity are described. The superiority of waterproofed regenerated cellulose over ordinary paper is emphasized. The rate of diffusion of water is inversely proportional to the thickness of the wrapper. —A.P.-C.

TAPPI and Kalamazoo Supers Meet

The fifth annual joint meeting of the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry and the Michigan Division of the American Pulp and Paper Mill Superintendents' Association was held in the ballroom of the Columbia Hotel on Thursday evening, January 18, at Kalamazoo, Mich. The attendance, 325 in number, exceeded that of previous years and practically every paper mill in the district covered by the two associations were represented, including many executives.

Lester LaLiberte, president of the superintendents' association, presided at the speakers' table, and Leroy Zellers, past national president of the superintendents' association, turned in a good job as toastmaster. A letter from F. C. Clark, president of TAPPI to the local organization, was read, he being unable to be present, and Howard Harrison, national president of the superintendents' association, responded in person. In his address he remarked on the remarkable growth of the two associations since their inception. Ralph Hayward, president of the Kalamazoo Vegetable Parchment Company, paid a tribute to the associations' growth and service to the industry.

The high spot of the occasion was the address of Samuel P. Pettingill, former Congressman from Indiana, nationally known as a conservative Democrat. His ideas on a different theory of American government to restore prosperity left his hearers plenty to think about and his personal observations and suggestions for the correction of our business ills seemed to have met with general acclaim by those present. Those attending were:

G. H. Allen, Leonard Abraham, John W. Ayers, Wilbur Anderson, William Astle, Percy G. Abbott, Kenneth Adams, D. D. Bachelder, Robert Banhold, John Bauman, Bernard Benson, Harry C. Bradford, Avery Braginton, Frank Brown, Lloyd Brown, C. L. Bachelder, Harold L. Burger, William Brower, Harold Ball, P. W. Bartholomew, Ray Barton, L. H. Breyfogle, E. S. Bierema, George D. Brown, E. H. Barnes, Frank J. Bos, J. Boodt, Philip Bixby, C. R. Black, U. S. Bratton, R. R. Buss, Harry E. Bowles, Peter Billiam, Fred L. Chappell, Olin W. Callighan, M. S. Clark, Everett M. Coleman, Wm. Carroll, Jr., Kenneth L. Conrad, Harley Clinard, Norman J. Cowie, E. M. Cowling, Robert Crowell, S. V. Cottrell, Wayne E. Crotty, T. R. Cox, Delmonte Cole, J. H. Coulter, W. F. Costello, George W. Cain, A. W. Cole, H. R. Chadwick, Arthur A. Coffin, J. D. Carey, J. R. Cummings, Sibet Camblin, C. J. Chambeck, C. P. Davis, Alex Dean, F. L. Denner, Joe Dennany, Arthur Depew, Dr. G. F. Des Autels, B. A. Devine, Ernest Devall, D. B. DeNoyer, Roy Davis, R. A. Diehm, R. K. Dietiker, Harold G. Doyen, Arthur G. Dreis, E. A. Dunton, Alje Dykens, Paul DeGuehery, Verlin E. Eller, J. Ely, Robert L. Eminger, Wm. C. Fisk, A. E. Fuller, A. H. Fitzgerald, Tom Falknor, H. K. Fisk, John Fouch, Merton Fogerty, O. F. Fischer, M. F. Flotow, Frederick Franz, Samuel J. Fortune, John W. Gilkey, A. D. Gilchrist, Buster Griffiths, Henry W. Gibb, P. H. Gideon, Arthur Gilman, C. M. Gilman, Wm. J. Goodhart, Lester Gilmore, E. C. Gamble.

W. F. Hoffman, W. C. Hurley, Everett Hayes, H. H. Harrison, W. F. Hathaway, R. A. Hayward, H. F. Heller, Harvey W. Hartman, Fred H. Henderson, Fred Hodgmire, V. Heinmuller, Leslie P. Hill, Murl Haney, Jack Hartung, F. R. Hamilton, Walter Hadley, C. A. Hubbard, Dick Hartman, C. F. Harper, Hod Heath, Fred Hunt, Emitt Irvine, Ray Irvine, Glenn Ingraham, Edgar Jameson, M. C. Jones, Joe Johnston, H. B. Johnston, J. Johnston, Geo. A. Johnson, J. Kindleberger, Kent W. Kidder, Lercy Kendall, Frank Kellogg, M. P. Kalleward, Earl Kindle, H. F. Kleinman, Clifford L. Kelly, Joseph Klein, A. R. Kloosterman, Theron Kenneda, R. E. Krudener, L. F. Kretchman, L. H. LaLiberte, W. J. Lawrence, Dave Lowe, E. E. Ludwig, John Lovett, Frank Libby, Jos. E. Loughead, J. O. Logan, Lloyd J. Lynd, Francis Lotz, T. H. Latimer.

Hoke Martin, Louis H. Miner, R. A. Mennier, V. C. Mathis, Don Montville, C. K. Muth, John Mauer, M. F. McCombs, Elbert G. Milham, Carl Mulder, Claude Meyers, Fred Myers, A. B. Milham, M. E. M. Martin, Frank J. Mantz, John Mennes, Otto Manthe, Glen A. Mitchell, P. F. Neuman, Henry Nendorf, Milford Nossaman, Jas. D. Nimms, Walter Nevsche, Harvey L. Nourie, Max E. Nichols, Ben Neidlinger, Charles Olmstead, J. J. O'Brien, Wm. M. Parkes, Dick Potgiesser, Claude E. Price, S. B. Pettingill, Al Perlick, Harry C. Pearson, C. A. Patchell, H. G. Potts, Frank Passage, James Phillips, Kenzie Phillips, A. N. Petersen, Robert H. Pratt, Dillon Parrish, Thos. W. Peck, Arthur H. Parker, Thomas F. Quinn, Vincent Rawlings, Wm. A. Riedel, Edward M. Root, John L. Russell, E. J. Roomsburg, Marshall H. Rutz, Asa P. Rice, Geo. H. Rice, Ralph Ralston, Ivan Randall, Joseph Ritchie, John Ruimveld, L. Robbins, Fred Roberts, Wm. J. Redmont, John F. Tuberty, Eberling Tanis, C. M. Treat, W. S. Taylor, E. B. Taylor, John Tooker, N. F. Themins, John F. TenBusschen, Glenn F. Touse, J. J. Thompson, W. R. Tobin.

A. Southon, Carl Swanson, Jr., Carl Swanson, Sr., Robert M. Sorlie, Robert Short, Elmer Schau, Dan Schuder, John R. Stinsen, Frank F. Schmeige, John C. Schneider, Carl C. Schneider, Earl Smathers, Peter Siwik, C. F. Simmerer, Harry Starr, K. L. Stratton, Walter L. Shaw, George Schmid, Geo. Shinners, Hubert Smith, Harry F. Schmitzer, Allan T. Sedgwick, Dave Shotwell, H. D. Schrier, Frank K. Shankweiler, Irwin J. Starrett, Lawrence E. Smith, Glen Sutton, Paul R. Schreiber, Enbly Sutherland, Robert N. Smith, Chas. D. Spencer, Hugh Smith, C. T. Sisson, Al. Sherwood, Lynn R. Spath, Robert B. Stewart, Lester L. Smith, F. W. Stratton, M. O. Shea, H. E. Stratton, Edward A. Sliss, Percy Shoup, Joe Steinbruner, Henry Vrobel, L. R. Verdon, James R. Verdon, C. E. VanBuren, Howard VandePolder, Arnold Weller, E. F. Whittington, Joe Widmeyer, Merle R. Wilkins, Clarence A. White, Wm. Wessel, J. G. Wright, C. F. Wesler, Arthur Weinland, Joe Waber, W. J. White, Samuel Weirick, Elmer Warden, Walter F. Wolfe, A. P. Wandtke, A. E. Woollam, F. Warrant, Robert Walker, Murray Williamson, John Wheater, W. A. Walkeedent, Maynard Youngs, Charles Zurawski, F. L. Zellers, M. C. Zeiser,

Production of Paper Board for November

Monthly statistics on paper board, .012 of an inch or more in thickness, have just been released by Director William L. Austin, Bureau of the Census, Department of Commerce. The statistics were compiled from data furnished by the National Paperboard Association from reports of members, and by manufacturers reporting direct to the Bureau.

The production of paper board for November 1939 amounted to 482,808 short tons, or 81.8 per cent of the rated capacity of the mills reporting. The ratio of inch hours of operation to rated capacity for November 1939 was 79.0 per cent as compared with 82.2 per cent for October, 1939, 65.1 per cent for November 1938, and 57.1 per cent for November 1937.

TABLE I.—INCH HOURS OPERATED, PRODUCTION, AND ORDERS (107 MANUFACTURERS FOR THE MONTHS OF MARCH TO NOVEMBER, INCLUSIVE; AND 105 FOR MONTHS OF JANUARY AND FEBRUARY, 1939, AND MONTHS OF 1938; AND 99 FOR MONTHS OF 1937)

Year and Month	Operated (Inch hours) (Based on last drier width) Rated capacity	Operation for month	Per cent of rated capacity	Production (Short tons) Rated capacity	Production during month	Per cent of rated capacity
1939						
Jan.	17,433,021	10,685,252	61.3	528,263	323,394	61.2
Feb.	16,433,327	10,957,222	66.7	499,519	338,803	67.8
March	18,861,450	13,090,135	69.4	574,528	421,576	73.4
April	17,827,014	12,087,334	67.8	540,124	372,984	69.1
May	19,290,234	12,235,709	63.4	585,422	375,772	64.2
June	18,682,308	12,262,903	65.6	565,674	376,509	66.6
July	18,845,583	11,784,020	62.5	573,662	366,605	63.9
Aug.	19,907,551	13,819,625	69.4	612,052	443,226	72.4
Sept.	19,257,060	14,171,316	73.6	589,956	445,387	75.5
Oct.	19,322,940	15,886,637	82.2	591,487	506,466	85.6
Nov.	19,257,060	15,214,305	79.0	589,956	482,808	81.8
(Total 11 months)	205,117,548	142,194,458	69.3	6,250,643	4,453,530	71.2
1938						
Jan.	15,868,832	9,082,127	57.2	490,492	268,121	54.7
Feb.	15,305,253	9,450,889	61.7	472,046	282,248	59.8
March	17,264,990	10,639,603	61.6	532,822	318,552	59.8
April	16,651,914	10,186,848	61.2	516,496	303,073	58.7
May	16,137,993	9,557,162	59.2	499,389	286,574	57.4
June	17,448,971	9,744,971	55.8	539,440	296,960	55.0
July	16,799,781	10,030,563	59.7	513,069	306,343	59.7
Aug.	17,495,698	11,770,100	67.3	533,443	358,977	67.3
Sept.	16,799,687	11,263,340	67.0	512,540	351,051	68.5
Oct.	16,845,693	11,874,787	70.5	512,074	370,977	72.4
Nov.	17,083,581	11,127,331	65.1	519,521	344,445	66.3
(Total 11 months)	183,702,393	114,727,721	62.5	5,641,332	3,487,321	61.8
Dec.	17,957,075	10,745,648	59.8	547,622	329,181	60.1
Total (Year)	201,659,468	125,473,369	62.2	6,188,954	3,816,502	61.7
1937						
Jan.	15,359,197	12,245,898	79.7	445,686	365,665	82.0
Feb.	14,277,332	12,327,520	86.3	414,796	373,431	90.0
March	16,366,534	14,171,655	86.6	467,701	428,506	91.6
April	16,528,775	14,750,097	89.2	470,851	436,610	92.7
May	15,399,621	13,298,991	86.4	437,266	397,073	90.8
June	16,654,846	12,581,325	75.5	473,069	380,882	80.5
July	16,738,295	11,647,090	69.6	488,591	346,721	71.0
Aug.	16,258,798	12,246,074	75.3	482,682	365,287	75.7
Sept.	16,276,557	11,630,152	71.5	487,172	348,091	71.5
Oct.	16,327,294	11,073,060	67.8	488,232	334,619	68.5
Nov.	16,242,670	9,278,687	57.1	484,367	272,007	56.2
(Total 11 months)	176,429,919	135,250,549	76.7	5,140,413	4,048,892	78.8
Dec.	17,019,634	8,497,295	49.9	507,622	244,825	48.2
Total (Year)	193,449,553	143,747,844	74.3	5,648,035	4,293,717	76.0

TABLE II.—CONSUMPTION AND STOCKS OF WASTE PAPER (89 MANUFACTURERS FOR MONTHS OF 1939 AND OF 1938, AND 85 FOR MONTHS OF 1937)

Year and Month	Consumption of waste paper (Short tons) Rated capacity	Consumed during month	Per cent of rated capacity	Stocks of waste paper at plants, end of month (short tons)
1939				
Jan.	384,085	233,311	60.7	282,095
Feb.	358,254	247,710	69.1	262,344
March	406,022	292,474	72.0	248,595
April	375,946	262,918	69.9	255,354
May	404,419	264,348	65.4	259,423
June	390,464	259,996	66.6	255,677
July	389,306	255,830	65.7	257,889
Aug.	414,689	314,316	75.8	246,219
Sept.	397,406	320,073	80.5	214,352
Oct.	413,300	365,396	88.4	218,649
Nov.	411,378	339,335	82.5	215,850
Total (11 mos.)	4,345,269	3,155,707	72.6	.....
1938				
Jan.	368,741	203,424	55.2	331,582
Feb.	353,992	215,047	60.7	325,166
March	399,440	243,571	61.0	333,218
April	384,778	224,715	58.4	319,816
May	371,612	210,117	56.5	318,698
June	399,648	218,652	54.7	312,684
July	384,783	221,218	57.5	300,917
Aug.	401,341	264,418	65.9	296,070
Sept.	384,784	254,024	66.0	284,239
Oct.	384,526	267,193	69.5	275,746
Nov.	382,908	243,924	63.7	274,951
Total (11 mos.)	4,216,553	2,566,303	60.9	.....
Dec.	397,698	221,768	55.8	290,648
Total (Year)..	4,614,251	2,788,071	60.4	.....
1937				
Jan.	371,916	295,554	79.5	211,295
Feb.	344,832	295,477	85.7	196,570
March	389,546	339,242	87.1	197,977
April	376,091	341,597	90.8	211,628
May	374,605	330,250	88.2	234,239
June	376,081	287,504	76.4	257,185
July	389,069	274,463	70.5	254,554
Aug.	376,081	287,443	76.4	258,064
Sept.	400,580	287,858	71.9	277,797
Oct.	376,081	256,162	68.1	293,818
Nov.	373,067	218,189	58.5	294,122
Total (11 mos.)	4,147,949	3,213,739	77.5	.....
Dec.	389,408	196,231	50.4	322,435
Total (Year)..	4,537,357	3,409,970	75.2	.....

Nation's First Census of Housing

A comprehensive picture of housing and home ownership in the United States will be compiled from information to be gathered by the 120,000 Census enumerators in conjunction with the Sixteenth Decennial Census to be conducted by the U. S. Bureau of the Census in April. Data, in response to a schedule of thirty-one questions bearing on the type of structure, equipment, and ownership, will be obtained for each of the approximately 35,000,000 dwellings throughout the country.

Housing experts point out that the information gathered will be of inestimable value in the determination of future housing policies. It will be of especial interest to manufacturers, builders, distributors and bankers in their study of trends in home ownerships and building in the United States. Census authorities explain that through their tabulations it will be possible to determine facts of vital importance to local geographical and political sub-divisions. For example, cities will be able to determine the distribution of the various types of housing within their limits, together with the possible need of expansion of transportation and communication systems, police and fire protection, schools, and similar facilities.

The tables will also help social workers to establish relationships between certain types of housing and human needs by correlating their own data on characteristics and locations of clients with the census information on characteristics of the homes.

Preliminary Program for "Paper Week"

The American Paper and Pulp Association has just issued the preliminary program for its 63rd annual meeting. All the meetings of the association, together with the allied associations, will be held February 19-23 at the Waldorf-Astoria Hotel, unless otherwise indicated in the program. The Technical Association of the Pulp and Paper Industry will meet at the Roosevelt Hotel.

Monday, February 19, 1940

8:00 A.M. American Paper and Pulp Association, Finance Committee—Breakfast.
9:00 A.M. Sulphite Paper Manufacturers Association, Budget Committee.
9:00 A.M. Sulphite Paper Manufacturers Association, Nominating Committee.
9.30 A.M. Institute of Paper Chemistry, Board of Trustees—Hotel Barclay.
9:30 A.M. Technical Association of the Pulp and Paper Industry, General Session—Roosevelt Hotel.
9:30 A.M. The Tissue Association, Wrapping Tissue Division.
10:00 A.M. Glazed and Fancy Paper Manufacturers Association, Annual Meeting and Luncheon—Commodore Hotel.
10:00 A.M. Groundwood Paper Manufacturers Association, Annual Meeting.
10:00 A.M. Writing Paper Manufacturers Association, Executive Committee.
10:30 A.M. Sulphite Paper Manufacturers Association, Board of Governors.
11:30 A.M. The Tissue Association, Waxing Tissue Division.
12:30 P.M. Bristol Board Manufacturers Group, Executive Committee—Luncheon.
12:30 P.M. Paper Makers Advertising Association, Annual Luncheon and Meeting—New England Room, Hotel Lexington.
1:00 P.M. Groundwood Paper Manufacturers Association—Luncheon.
1:00 P.M. Sulphite Paper Manufacturers Association, Annual Association Meeting and Luncheon.
1:00 P.M. Writing Paper Manufacturers Association, Rag Content Executive Committee—Luncheon.
2:00 P.M. American Paper and Pulp Association, Executive Committee.
2:00 P.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Water Session; Acid Pulping and Heat and Power Session; Paper Testing Session—Roosevelt Hotel.
2:30 P.M. Bristol Board Manufacturers Group, General Meeting.
2:30 P.M. Groundwood Paper Manufacturers Association Annual Meeting, Continued.
2:30 P.M. The Tissue Association, Jumbo Roll Division.
3:30 P.M. Sulphite Paper Manufacturers Association, Bleached Paper Group.
3:30 P.M. The Tissue Association, Jumbo Napkin Division.
4:30 P.M. Salesmen's Association of the Paper Industry, Executive Committee and Advisory Board.
6:00 P.M. Sulphite Paper Manufacturers Association, M. G. Sulphite Group—Dinner.

Tuesday, February 20, 1940

9:30 A.M. American Paper and Pulp Association, Biological Control Committee.
9:30 A.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Coating Session; Alkaline Pulping Session; Non-Fibrous Materials, Preparation and Testing Session—Roosevelt Hotel.
10:00 A.M. Book Paper Manufacturers Association, Executive Committee.
10:00 A.M. Salesmen's Association of the Paper Industry, Annual Meeting.
10:00 A.M. Specialty Paper and Board Affiliates, Executive Committee.
10:00 A.M. Sulphite Paper Manufacturers Association, Unbleached Group.
10:00 A.M. Writing Paper Manufacturers Association, 79th Annual Meeting.
11:00 A.M. American Waxed Paper Association, Annual Meeting.
11:00 A.M. National Association of Manufacturers of Pulp and Paper Mill Machinery.
11:30 A.M. Specialty Paper and Board Affiliates, Mill Blanks Group.
12:30 P.M. American Paper and Pulp Association, Nominating Committee—Luncheon.
12:30 P.M. National Association of Manufacturers of Pulp and Paper Mill Machinery—Luncheon.
12:30 P.M. Salesmen's Association of the Paper Industry, Annual Luncheon.
1:00 P.M. American Waxed Paper Association—Luncheon.
2:00 P.M. Blotting Paper Manufacturers Association, General Meeting.
2:00 P.M. The Tissue Association, General Industry Meeting.
2:00 P.M. Technical Association of the Pulp and Paper Industry, two Meetings: Alkaline Pulping and Pulp Purification Session; Microbiology Session—Roosevelt Hotel.
2:30 P.M. American Waxed Paper Association, Annual Meeting, Continued.
2:30 P.M. Writing Paper Manufacturers Association, Rag Content Paper Group.
3:00 P.M. Specialty Paper and Board Affiliates, General Meeting.
3:30 P.M. Sulphite Paper Manufacturers Association, Manila Group.
4:00 P.M. American Paper and Pulp Association, Technical Committee and Technical Association of the Pulp and Paper Industry, Survey Committee—Roosevelt Hotel.
5:00 P.M. The Tissue Association, Board of Governors.
6:00 P.M. Glassine and Greaseproof Manufacturers Association, Executive Committee—Dinner.

Wednesday, February 21, 1940

8:30 A.M. Writing Paper Manufacturers Association, Sulphite Bond Executive Committee—Breakfast.

9:30 A.M. Cardboard Manufacturers Association, General Meeting followed by Group Meetings.
9:30 A.M. Technical Association of the Pulp and Paper Industry, two Meetings: Graphic Arts Session; Materials of Construction Session—Roosevelt Hotel.
10:00 A.M. Association of Newsprint Manufacturers of the United States.
10:00 A.M. Book Paper Manufacturers Association, Offset Committee.
10:00 A.M. Glassine and Greaseproof Manufacturers Association, Annual Meeting.
10:00 A.M. Gummed Industries Association, Annual Industry Meeting.
10:00 A.M. Specialty Paper and Board Affiliates, Tag Board and File Folder Group.
10:30 A.M. Writing Paper Manufacturers Association, Sulphite Bond Group.
12:30 P.M. Gummed Industries Association, Luncheon.
1:00 P.M. Glassine and Greaseproof Manufacturers Association—Luncheon.
2:00 P.M. American Paper and Pulp Association, Board of Governors.
2:00 P.M. Gummed Industries Association, Annual Industry Meeting, Continued.
2:00 P.M. Technical Association of the Pulp and Paper Industry, three Meetings: Container Sessions; Heat and Power Session; Optical Properties Session; Roosevelt Hotel.
2:30 P.M. American Paper and Pulp Association, Open Meeting.
4:00 P.M. Specialty Paper and Board Affiliates, Lined Board Group.

Thursday, February 22, 1940

9:30 A.M. Technical Association of the Pulp and Paper Industry, two Meetings: Forming and Finishing Session; Coating and New Products Session—Roosevelt Hotel.
10:00 A.M. Writing Paper Manufacturers Association, Cover Paper Group.
12:30 P.M. Vegetable Parchment Manufacturers Association, Annual Meeting—Luncheon.
1:30 P.M. Technical Association of the Pulp and Paper Industry, Annual Luncheon—Roosevelt Hotel.

Friday, February 23, 1940

9:30 A.M. American Pulpwood Association, Annual Meeting followed by New Directors' Meeting.
1:30 P.M. American Pulpwood Association—Luncheon.

The following meetings are scheduled prior to the opening of the Convention on Monday:

Saturday, February 17, 1940

10:30 A.M. The Tissue Association, Board of Governors Meeting and Luncheon.
10:00 A.M. Writing Paper Manufacturers Association Merchandising Survey Committee.

Sunday, February 18, 1940

10:30 A.M. The Tissue Association, Paper Napkin Manufacturers Division.
2:00 P.M. Roll Toilet Tissue Division.
3:30 P.M. Interfold Toilet Tissue Div.
5:00 P.M. Paper Towel Division.
10:00 A.M. United States Pulp Producers Association, Annual Meeting.
1:00 P.M. Luncheon.
2:00 P.M. Annual Meeting, Continued.

Assign Space for Paper Exhibit

The office of The National Paper Trade Association reports that the program for their 37th annual convention is practically completed. This will be held as usual at the Waldorf-Astoria, New York City, during Paper Week which is also marked by the Annual Convention of the American Paper and Pulp Association. The N.P.T.A. program starts with a meeting of the executive committee on Sunday, February 18, followed by a full schedule of meetings from Monday to Thursday, February 19-22.

On Monday afternoon, February 19, the association will hold its usual introductory session open to all members of the trade. The speakers at this session will be President Arthur A. Hauck of the University of Maine, and Paul T. Truitt of the Department of Commerce, Chairman of the Interdepartmental Committee on Interstate Trade Barriers. At the Tuesday morning session, February 20, the principal speaker will be V. E. Vining, director of Department Store Sales, Westinghouse Electrical Manufacturing Company, one of the best known sales executives in the country. Wednesday morning, February 21, at the meeting of the Wrapping Paper Division, there will be an address by V. C. Redd, a prominent merchant of Cynthiana, Ky.,

Following is a list of exhibitors to whom space has been assigned. Additional applications are still being received: Riegel Paper Corporation, Erving Paper Mills, Better Packages, Inc., The Victoria Paper Mills Company, Voorhis-Tiebout Company, Inc., Pejepscot Paper Company, Eagle Cup Corporation, Dennison Manufacturing Company, A. W. Archer Company, Inc., Orchard Paper Company, John M. Hart Company, Inc., Gilson Bros. Inc., Boston Drinking Cup Company, Loroco Industries, Inc., Oval Wood Dish Corporation, Herz Manufacturing Corporation, Hudson Pulp and Paper Company, Racquette River Paper Company, Crystal Paper Service Company, Universal Paper Products Company, Self-Locking Carton Company, White-Washburne Company, Inc., Royal Paper Corporation, American Paper Goods Company, Hinde & Dauch Paper Company, Oneida Paper Products Inc., International Tag and Sales Book Company, Brown Company, A. P. W. Paper Company, Hy-Sil Manufacturing Company, Van Riper Schmitt & Co., Industrial Tape Corporation, Dixie-Vortex Company, Union Bag and Paper Company, Reed Tissues Corporation, McLaurin-Jones Company, Sherman Paper Products Corporation, Allied Paper Bag Corporation, Schorsch & Co., Baldwin Laboratories, Inc., Central Paper Company, Lily-Tulip Cup Corporation, Rexford Paper Company, Wheeler Paper Corporation, Derby Sealers, Inc., Alfred Bleyer & Co., Sutherland Paper Company, Crystal Tissue Company, Gaylord Container Company, Bay West Paper Company, Stone Straw Company, Sav-Mor Products Company, Consolidated Water Power and Paper Company, Ludlow Manufacturing and Sales Company, C. E. Twombly Company.—*The Paper Mill.*

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JANUARY 27, 1940

SUMMARY

Wall board .....4741 bdls.
Newsprint ..... 1062 rolls
Wrapping paper .....699 bls.
Kraft paper .....315 bls., 26 rolls.
Filter paper .....4 cs.
Greaseproof .....51 cs.
Miscellaneous paper .....12 cs., 123 bls.,3613 rolls.

WALLBOARD

Treetex Corp., ——, Gothenburg, 3550 bdls.
Treetex Corp., ——, Gothenburg, 1191 bdls.

NEWSPRINT

Gilman Paper Co., ——, Gothenburg, 676 rolls.
Jay Madden Corp., *Mormacport,* Langestein, 386 rolls.

WRAPPING PAPER

——, ——, Gothenburg, 699 bls.

KRAFT PAPER

Parsons & Whittemore, Inc., ——, Gothenburg, 113 bls.
H. F. Eberheim, ——, Gothenburg, 26 rolls.
——, ——, Gothenburg, 202 bls.

FILTER PAPER

E. H. Sargent & Co., ——, Gothenburg, 4 cs.

GREASEPROOF PAPER

H. F. Eberheim, ——, Gothenburg, 51 cs.

MISCELLANEOUS PAPER

Steiner Paper Corp., ——, Gothenburg, 8 cs.
United Fruit Co., ——, Gothenburg, 5 bls., 107 rolls.
National Pulp & Paper Co., ——, Gothenburg, 105 bls., 475 rolls.
H. F. Eberheim, ——, Gothenburg, 60 rolls.
R. C. Hunt, ——, Gothenburg, 4 cs.
The Borregaard Co., Inc., ——, Gothenburg, 3 bls., 42 rolls.
National Pulp & Paper Co., ——, Gothenburg, 2969 rolls.
American Trading Co., ——, Gothenburg, 10 bls., 20 rolls.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., *Exhibitor,* ——, 97 bls. bagging.
W. Steck & Co., *Exhibitor,* Alexandria, 123 bls. bagging, 102 bls. hessions.
R. Blank, *Exhibitor,* Alexandria, 94 bls. colored cotton rags.
S. Shapiro & Sons, *Carmefjell,* Marseilles, 33 bls. old cotton rags.
National City Bank, *Clara,* Trieste, 187 bls. old bagging.
Continental Bank Trust Co., *Clara,* Trieste, 85 bls. old cotton rags.
Central Hanover Bank Trust Co., *Tindefjell,* Murmansk, 537 bls. flaxwaste.
Chase National Bank, *Tindefjell,* Murmansk, 153 bls. linen rags.
——, *Siboney,* Vera Cruz, 93 bls. bagging waste.

SHEET GLUE

Trans-Atlantic Animal By-Products Corp., *Clara,* Trieste, 100 cs.

WOODPULP

Perkins Goodwin & Co., *Svanhild,* Hernosand, 222 bls. dry sulphite, 1050 bls. dry mechanical pulp.
E. M. Sergeant Pulp & Chemical Co., *Svanhild,* Hernosand, 300 bls. dry sulphite.
Cellulose Sales Co., Inc., *Svanhild,* Hernosand, 2100 bls. air dry sulphite.
Gottesman & Co., Inc., ——, Gothenburg, 4380 bls. prime strong kraft pulp.
D. M. Hicks, Inc., ——, Gothenburg, 450 bls. dry sulphite.
Pagel Horton & Co., Inc., ——, Husum, 6000 bls. dry sulphate.
Stora Kopparberg Corp., ——, Gothenburg, 1780 bls. dry woodpulp.
Bulkley Dunton Pulp Co., Inc., ——, Gothenburg, 1500 bls. dry sulphite.
Pagel Horton & Co., Inc., ——, Gothenburg, 2184 bls. chemical pulp.
Stora Kopparberg Corp., ——, Gothenburg, 1470 bls. dry woodpulp.
Stora Kopparberg Corp., ——, Skutskar, 1440 bls. dry woodpulp.
Perkins Goodwin & Co., ——, Sundsvall, 330 bls. dry sulphite.
Gottesman & Co., Inc., ——, Sundsvall, 3000 bls. dry sulphate.
Bulkley Dunton Pulp Co., Inc., ——, Iggesund, 2900 bls. sulphate, 400 bls. sulphite.
Cellulose Sales Co., Inc., *Mormacport,* Langestein, 1410 bls. kraft sulphate, 238 tons; 2400 bls. dry sulphate, 487 tons.
Bulkley Dunton Pulp Co., Inc., *Mormacport,* Langestein, 1068 bls. kraft sulphate, 180 tons.

WOODPULP BOARDS

Wilkinson Bros. & Co., Inc., ——, Gothenburg, 18 rolls.
Newark Brush Co., ——, Gothenburg, 14 crates.
Salwen Paper Co., ——, Gothenburg, 31 bls.
H. Fuchs & Son., ——, Gothenburg, 21 crates.
Beaverite Products Co., ——, Gothenburg, 250 bls.

NEWARK IMPORTS

WEEK ENDING JANUARY 27, 1940

Pulp Sales Corp., *Zephyr,* Kemi, 16,835 bls., prime strong sulphate.

NEW LONDON IMPORTS

WEEK ENDING JANUARY 27, 1940

Pagel Horton & Co., Inc., *Novasli,* Sweden, 2500 bls. woodpulp.

BOSTON IMPORTS

WEEK ENDING JANUARY 27, 1940

Perkins Goodwin & Co., *Svanhild,* Hernosand, 5580 bls. dry sulphite, 312 bls. dry mechanical pulp.
E. M. Sergeant Pulp & Chemical Co., *Svanhild,* Hernosand, 2100 bls. dry sulphite.
Bulkley Dunton Pulp Co., Inc., *Svanhild,* Hernosand, 600 bls. dry sulphite.
Price & Pierce, Ltd., *Novasli,* ——, 2910 bls. unbleached sulphate, 3300 bls. unbleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 27, 1940

Castle & Overton, Inc., *Exhibitor,* Alexandria, 172 bls. rags.
E. J. Keller Co., Inc., *Exhibitor,* ——, 155 bls. old rags.
Cellulose Sales Co., Inc., *Mormacport,* Langestein, 1530 bls. dry sulphite, 310 tons.
Price & Pierce, Ltd., *Toronto,* ——, 500 bls. bleached sulphite.

WILMINGTON IMPORTS

WEEK ENDING JANUARY 27, 1940

Pagel Horton & Co., Inc., *Ruth,* Sweden, 4546 bls. woodpulp.

BALTIMORE IMPORTS

WEEK ENDING JANUARY 27, 1940

Price & Pierce, Ltd., *Hjelmaren,* ——, 900 bls. unbleached sulphite.
Price & Pierce, Ltd., *Ruth,* ——, 6390 bls. bleached sulphate, 1800 bls. unbleached sulphate, 2100 bls. unbleached sulphite.
Parsons & Whittemore, Inc., *Gundega,* ——, 12,500 bls. woodpulp.
Pagel Horton & Co., Inc., *Svaneholm,* Sweden, 2500 bls. woodpulp.
Pagel Horton & Co., Inc., *Rita,* Sweden, 6924 bls. woodpulp.

New York Paper and Pulp Market Review

Paper and Paper Board Production and Sales Continue At Relatively High Level and About 8 Per Cent Above Same Period Last Year — Pulp Prices Higher On Prime Imported Brands — Rag and Paper Prices Firm.

Office of the PAPER TRADE JOURNAL,
Wednesday, January 31, 1940.

Wholesale sales of paper, paper board, and paper products continues at a relatively high level, although volume has declined substantially from the peak reached last year. Reports of a small volume decline in general business activity and in production in many major industries is reflected in the index of general business activity. The index declined to 103.7 per cent for the week ended January 20, from 105.0 per cent for the preceding week, compared with 91.4 per cent for the corresponding week in 1939. Reports from general paper merchants indicate that sales volume today is nearly 10 per cent above that of the corresponding period last year.

Paper production of 189 mills for the week ended January 20 declined to an estimated 90.4 per cent, compared with 78.3 per cent in 1939, with 66.0 per cent in 1938, with 88.0 per cent in 1937, and with 76.7 per cent for the corresponding week in 1936.

Paper board production for the week ended January 20 declined to 72.0 per cent, compared with 65.0 per cent in 1939, with 58.0 per cent in 1938, with 82.0 per cent in 1937, and with 64.0 per cent in 1936.

No important change has been reported in the newsprint market during the current week. Prices remain firm at from $49 to $50 per ton on newsprint in rolls.

Reports from many manufacturers' representatives, jobber, and general paper merchants received during the week indicate that volume is about equal to expectations in book, tissue and bond papers, with the trade generally viewing the future as favorable and expecting an increase in sales next month. Orders and shipments of kraft paper continue at a relatively high level and sales are considered satisfactory for this period of the year.

Wall paper mills expect this year to be one of the best years in point of volume, at around 400,000,000 rolls, compared with 411,000,000 rolls in 1937, which was an all-time record year. Wall paper sales in 1939 are estimated at about 350,000,000 rolls.

Prices on all kinds of paper, paper board and paper products are firm and the general price trend is reported as upward, with only moderate upward revisions in prices expected in the future.

Mechanical Pulp

Demand for mechanical pulp continues active. Prices are very firm and higher quotations are reported this week on imported brands. No. 1 moist and dry imported mechanical pulp is currently quoted at from $38 to $44 per ton, on dock, Atlantic ports.

Chemical Pulp

All the higher grades of chemical pulp are reported as scarce with a decided shortage in the higher grades of imported pulp. Prime grades of unbleached sulphite pulp are difficult to obtain. Prices are very firm with the trend upward. Prime bleached sulphite is currently quoted at from 3.00 to 3.40, easy bleaching sulphite at from 2.75 to 2.95, strong unbleached sulphite at from 2.75 to 2.85, and No. 1 imported kraft pulp at from 2.40 to 2.65. The price of domestic kraft pulp is unchanged at from 1.80 to 2.12½.

Rags

Mill buying of rags continues rather slow, while inquiries from England have increased for No. 1 white shirt cuttings. Expansion is being checked by the difficulty of obtaining cargo space on steamers bound for European ports. Prices are firm with no important changes reported to date.

Old Rope and Bagging

The old rope market continues strong as supplies of old domestic Manila and imports of old rope are under normal in volume. Prices are very firm on Manila but no important change from prevailing prices has been reported in this market this week.

The price trend in old bagging is reported in some quarters of the trade as upward, under a rising foreign demand and with supplies becoming more difficult to obtain. Prices continue unchanged.

Old Waste Paper

The paper stock market continues firm with no changes in the price of mixed paper reported. The recent price reduction in No. 1 mixed paper in the Chicago market is reported to have served to check the expected upward revision in the New York market price on this grade. White ledger stock is higher this week and currently quoted at from 1.75 to 1.85. Old kraft is also up and currently quoted at from 1.35 to 1.40. All other prices remain unchanged.

Twine

The twine market continues to be reported as strong, prices firm and the trade generally expecting an upward revision in prices before long. At this date no important price changes from representative market quotations on any grade of hard or soft fiber twine has been reported.

Hold Calender Review at Boston City

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 30, 1940—Thacher Nelson, president of Henry A. Loudon, advertising agency, gave an interesting review of the Tileston & Hollingsworth Calender before a large audience last evening at the Boston City Club.

Mr. Nelson gave the review on invitation of the Craftsmen's Club, with the Boston Typothetae, Inc., Society of Printers, The Bookbuilders and Advertising Club of Boston cooperating to make the meeting a big one.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, January 31, 1940.

BLANC FIXE—Prices on blanc fixe are firm under a moderately good demand. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is quoted at $50 per ton, in bags, at works.

BLEACHING POWDER—Quotations on bleaching powder are firm under a moderately good demand and unchanged at prevailing market prices. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are a little lower for this week. Standard domestic casein, 20-30 mesh, is currently quoted at 14 cents per pound; 80-100 mesh, at 14½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is quoted at 13 cents per pound. The price of 14 cents per pound on French casein is nominal.

CAUSTIC SODA—Quotations on caustic soda are firm under a moderately active demand. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay are firm and are reported unchanged for the week. Domestic filler clay is currently quoted at from $7 to $15 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is quoted at from $13.50 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine are firm under a moderately good demand and conform to prevailing market prices. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week, with prices on some grades lower. "G" gum rosin is currently quoted at $5.10 per 280 pounds, gross weight, in barrels, Savannah. "FF" wood rosin is quoted at $4.90 per 280 pounds, gross weight, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.78 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake continue firm under a good demand and are practically nominal. Domestic salt cake is currently quoted at $17 per ton, in bulk; chrome salt cake at $16 per ton; all prices car lots, f.o.b., shipping point. The price of $20 per ton on imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue unchanged at prevailing market prices. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged at prevailing market quotations. Globe pearl is currently quoted at $2.50 per 100 pounds; special paper starch at $2.60 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm and conform to prevailing market levels. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.45 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue unchanged at prevailing market quotations. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market levels. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $23 to $45 per ton.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.00	@	$5.50
Superstandard	4.62½	"	5.00
Northern Standard Wrapping	4.25	"	4.62½
Standard Wrapping	4.00	"	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	"	—
White No. ½	.70	"	—
White No. 2	.65	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.87½	"	—
Kraft	.80	"	—
Manila	.65	"	—
Unbl. Toilet, 1 M.	3.50	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	1.95	@	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	45.00	@	—
Chip	45.00	"	—
Sgl. Mla. Ll. Chip	57.50	"	—
Jute Lined Chip	57.50	"	—
White Pat. Coated	70.00	"	—
Kraft Liners	55.00	"	—
Binders Boards	76.00	"	87.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @ $46.00		$40.25 @ $47.25	
100% Rag	31.05 " 36.50		32.20 " 37.75	
85% Rag	.... "		29.90 " 35.00	
75% Rag	23.60 " 27.75		24.75 " 29.00	
65% Rag	.... "		21.65 " 26.25	
50% Rag	17.55 " 21.50		18.70 " 22.75	
25% Rag	14.65 " 17.75		15.80 " 19.25	

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.95 @ $11.00	$10.10 @ $12.25
No. 2	8.05 " 9.75	9.25 " 11.25
No. 3	7.60 " 9.25	8.50 " 10.75
No. 4	7.30 " 9.00	8.50 " 10.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	8.35	"	9.50
No. 2 Offset	7.70	"	9.00
A Grade E. F.	7.50	"	8.75
A Grade S. & S. C.	7.75	"	9.00
B Grade E. F.	6.95	"	8.00
B Grade S. & S. C.	7.20	"	8.25
C Grade E. F.	6.65	"	7.75
C Grade S. & S. C.	6.90	"	8.00
D Grade E. F.	6.40	"	7.50
D Grade S. & S. C.	6.65	"	7.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	$38.00	@	44.00
Dry	38.00	"	44.00
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.00	@	3.40
Prime Qualities—			
Easy-Bleaching Sulphite	2.75	"	2.95
Strong Unbleached Sulphite	2.75	"	2.85
(On Dock, Atlantic Ports)			
Kraft Bleached	3.00	@	3.50
Kraft Light & Strong	2.50	"	2.75
Kraft No. 1	2.40	"	2.65
(F. o. b. Pulp Mill)			
Kraft Domestic	1.80	"	2.12½
(Delivered)			
Soda Bleached	2.90	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	7.50	@	7.75
Silesias No. 1	4.50	"	4.75
New Unbleached	7.50	"	7.75
Blue Overall	5.00	"	5.25
Fancy	2.25	"	2.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.25	"	3.50

Old Rags

White, No. 1—			
Repacked	3.25	"	3.50
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	2.00	"	2.25
Miscellaneous	1.75	"	1.90
Roofing Rags—			
No. 1	1.50	"	1.55
No. 2	1.20	"	1.27½
No. 3 (bagging)	1.50	"	1.60
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxford	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

J. Andersen & Co.

Selling Agents

21 East 40th Street

New York

CHEMICAL & MECHANICAL PULP

Kraft Pulp

BERGVIK OCH ALA NYA AKTIEBOLAG
Söderhamn, Sweden
KALIX TRÄINDUSTRI AKTIEBOLAG
Vanoffärden, Sweden
MUNKSUNDS AKTIEBOLAG
Munksund, Sweden
NENSJÖ CELLULOSA A.-B.
Sprängsvikan, Sweden

Bleached Sulphite

KELLNER-PARTINGTON PAPER PULP CO., LTD.
Sarpsborg, Norway
Edsvalla, Sweden
Hallein & Villach, Austria

Unbleached Sulphite

AKTIESELSKABET GREAKER CELLULOSEFABRIK
Greaker, Norway
BERGVIK OCH ALA NYA AKTIEBOLAG
Söderhamn, Sweden
CELLULOSEFABRIKS A.-G.
Bratislava, Czecho-Slovakia
SVANÖ AKTIEBOLAG
Svanö, Sweden

CHECK the BAG you want to produce

COFFEE BAGS —	NAIL BAGS —
SUGAR BAGS —	GARBAGE BAGS —
FLOUR BAGS —	WATERPROOF BAGS —
GROCERY BAGS —	WAXED BAGS —
NOTION BAGS —	PANTS BAGS —
MILLINERY BAGS —	GLASSINE BAGS —
DRY CLEANER BAGS —	CELLOPHONE BAGS —
BANANA BAGS —	FOIL BAGS —
CEMENT BAGS —	BREAD BAGS —
SHOPPING BAGS —	CANDY BAGS —
CHARCOAL BAGS —	SPECIALTY BAGS —

. . . . then cut out the advertisement and mail it to POTDEVIN. For information on other types of paper bag machinery, printing presses, waxing machines or special paper converting machines, write POTDEVIN your particular requirements.

POTDEVIN PAPER CONVERTING MACHINERY

POTDEVIN MACHINE CO.
1223 38th Street
Established 1893
Brooklyn, New York
Telephone 6-1700-2

THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY
CANTON, MASS.

Woolen manufacturers since 1856

ENGLISH ECCO CLAYS

ECCO CLAYS

UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens..	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.50	@	2.75
Domestic	2.25	"	2.50
Wool Tares, light...	1.75	"	2.00
Wool Tares, heavy..	1.80	"	1.90
Bright Bagging.....	2.25	"	2.50
Manila Rope—			
Foreign	4.25	"	4.50
Domestic	4.25	"	4.50
Jute Threads.....	3.00	"	3.25
Sisal Strings.....	2.00	"	2.25
Mixed Strings.....	.70	"	.85

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.25	@	2.50
Soft White No. 1..	1.80	"	1.90
Soft White Extra..	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag....	1.00	"	1.10
Solid Flat Book...	.80	"	.90
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.75	"	1.85
Ledger Stock Colored	1.05	"	1.15
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.40	"	1.50
Old Kraft Machine—			
Compressed bales..	1.35	"	1.40
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue.	.70	"	.75
Strictly Folded....	.47½	"	.52½
Corrugated	.60	"	.65
No. 1 Mixed Paper..	.27½	"	.32½

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.18½	@	—
White Hemp.....	.18½	"	—
Fine Polished—			
Fine India.....	.23	"	—
Unpolished—			
Box	.14¾	"	—
Paper Makers.....	.15	"	—
Tube Rope.....	.16¼	"	—
Wall Paper.....	.15¾	"	—
Wrapping	.18	"	—
Soft Fiber Rope...	.16¼	"	—
Cotton	.21	"	—

(Hard Fiber)

Medium Java.....	.19	"	—
Mex. Sisal.....	.16	"	—
Manila	.24	"	—
Domestic	4.00	@	4.50
Sisal Rope	2.25	"	2.50
Mixed Rope	.75	"	1.00
Transmission Rope ..	3.00	"	—
Soft Jute Ropes.....	3.00	"	3.50
Jute Carpet Threads.	1.25	"	1.50
Gunny Bagging—			
Foreign	3.00	@	—
Domestic	2.45	"	2.50
Bleachery Burlap....	3.50	"	3.75
Scrap Burlap—			
Foreign	2.40	"	2.50
Domestic	1.90	"	2.00
Scrap Sisal.....	2.25	"	2.50
Scrap Sisal for Shredding	2.50	"	2.75
Wool Tares, Heavy..	2.50	"	2.60
New Burlap Cuttings	3.25	"	3.50
Aust. Wool Pouches.	3.25	"	3.50
Heavy baling bagging	2.65	"	2.75
Paper Mill Bagging..	1.25	"	1.50
No. 2 Bagging	1.10	"	1.25

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1...	.08	"	.08¼
New Light Flannelettes	.05	"	—
Silesias No. 1	.05	"	—
New Black Silesias..	.03½	"	.03¾
Soft Unbleached....	7.50	"	8.00
Blue Cheviots	.05½	"	.06
Fancy	.02	"	.02½
Washable	.02	"	.02½
Cottons—According to grades—			
Blue Overalls	.05¼	"	.05½
New Black, soft ..	.03¼	@	.04
Khaki Cuttings	.02½	"	.03
O. D. Khaki	03	"	.03½
Corduroy	.02¾	"	.03
New Canvas.....	.06¾	"	.07¼
B. V. D. Cuttings...	.07	"	.07½

Domestic Rags (Old)

(F. o.b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	"	2.75
Miscellaneous	2.50	"	2.75
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues	2.25	"	2.50
Old Blue Overalls ..	1.60	"	2.00
Thirds and Blues—			
Repacked	2.00	"	2.25
Miscellaneous	1.50	"	1.60
Black Stockings	4.00	"	4.25
Roofing Stock—			
No. 1.....	1.75	"	2.00
No. 2.....	1.60	"	1.65
No. 3.....	1.00	"	1.25

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....(nominal)	
Dutch Blues.....(nominal)	
New Checks and Blues(nominal)	
Old Fustians.....(nominal)	
Old Linsey Garments.(nominal)	
New Silesias.....(nominal)	

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04	"	.04½
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04½
Black Silesias, soft	—	"	.03¾
New Unbleached..	.05½	"	.06
Washable, No. 1..	—	"	.04
Blue Overall.....	—	"	.05
Cottons—According to grades—			
Washable No. 2...	—	"	.02
New Blue	—	"	.02
Fancy Percales....	—	"	.03
New Black Soft...	—	"	.04
New Light Seconds	.04½	"	.05
New Dark Seconds	—	"	1.55
Khaki Cuttings—			
No. 1 O. D.....	.03½	"	.04
No. 2 Mixed.....	.03	"	.03¼
Corduroy	—	"	.02½
New Canvas.....	.05½	"	.06
New Black Mixed.	—	"	.03

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.75
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	2.00	"	2.25
Repacked	2.50	"	2.75
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1....Nominal			
Domestic No. 1..	1.50	"	1.60
Domestic No. 2...	1.35	"	1.45
Roofing Bagging..	—	"	1.30

Bagging

(f.o.b. Phila.)

Gunny, No. 1—			
Foreign .....Nominal			
Domestic	2.50	@	3.00
Manila Rope.....	3.25	"	3.75
Sisal Rope.....	1.75	"	2.00
Mixed Rope.....	1.25	"	1.50
Scrap—			
No. 1.....	2.00	"	2.50
No. 2.....	—	"	1.30
Wool Tares, heavy..	3.50	"	3.70
Mixed Strings	.75	"	1.00
No. 1 New Light Burlap	3.00	"	3.50
New Burlap Cuttings	2.00	"	2.25

Old Papers

(f.o.b. Phila.)

Shavings—			
No. 1 Hard Write	2.25	@	2.30
No 2 Hard White	2.00	"	2.10
No. 1 Soft White	1.85	"	1.90
No. 2 Soft White	1.50	"	1.60
No. 1 Mixed.....	.90	"	1.00
Solid Ledger Stock..	1.50	"	1.60
Ledger Stock, white.	1.40	"	1.45
Ledger Stock, colored	1.10	"	1.20
No. 1 Books, heavy..	.90	"	.95
Manila Cuttings.....	1.75	"	1.80
Print Manila.....	.60	"	.70
Container Manila....	.50	"	.60
Kraft Paper.....	1.00	"	1.10
No. 1 Mixed Paper..	.40	"	.45
Straw Board Chip...	—	"	.40
Binders Board Chip..	.40	"	—
Corrugated Board...	.60	"	.65
Overissue News.....	.70	"	.75
Old Newspapers.....	.50	"	.55

BOSTON

Old Papers

(f.o.b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White	1.85	"	2.15
No. 2 Mixed.....	.75	"	.80
Solid Ledger Books..	1.30	"	—
Overissue Ledger Stock	1.30	"	1.50
Mixed Ledgers.....	.85	"	.90
No. 1 Books, heavy..	1.00	"	1.10
No. 1 Books, light..	.65	"	.75
Crumpled Stitchless Book Stock.....	.55	"	.65
Manila Env. Cuttings	1.70	"	1.85
Manila Envelope Cuttings, extra quality	2.35	"	2.60
White Blank News..	1.40	@	1.50
No. 1 Kraft.....	1.10	"	1.20
Mixed Papers	.30	"	.32½
Print Manila.....	.65	"	.70
Container Manila...	.60	"	.70
Old Newspapers.....	.60	"	.65
Paper Wool Strings	.80	"	.90
Overissue News.....	.70	"	.75
Box Board Chips....	.50	"	.52½
Corrugated Boxes....	.50	"	.60
Kraft corrugated boxes	1.05	"	1.10
Screening Wrappers	.60	"	.70

Bagging

(f.o.b.Boston)

Manila Rope—			
Foreign	4.25	@	4.50

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots.			
No. 1 White $36.50		@	—
No. 1 Tints	37.50	"	—
No. 2 White	26.50	"	—
No. 2 Tints	27.50	"	—
No. 2 Golden Rod..	28.50	"	—
No. 3 White	22.00	"	—
No. 4 White	15.50	"	—
No. 4 Tints	16.50	"	—
No. 4 Golden Rod..	17.50	"	—
Direct mill shipment in three-ton lots.			
No. 5 White $10.40		@	—
No. 5 Tints	11.40	"	—
No. 5 Golden Rod..	12.40	"	—
No. 6 White	9.40	"	—
No. 6 Tints	9.90	"	—
No. 6 Golden Rod..	11.40	"	—
No. 7 White	8.40	"	—
No. 7 Tints	8.90	"	—
No. 7 Golden Rod..	10.40	"	—
Book—			
No. 1 M. F.	$7.75	"	—
No. 2 M. F.	7.25	"	—
No. 3 M. F.	6.60	"	—
No. 1 S. C.	8.25	"	—
No. 2 S. C.	7.75	"	—
No. 3 S. C.	6.25	"	—

Coated Book & Litho

Ton Lots (resale)

No. 1 .....$12.15		@	—
No. 2	10.50	"	—
No. 3	9.45	"	—
Coated tinted.....	13.20	"	—
Golden Rod.....	14.80	"	—
Wrapping—delivered—			
Rag Brown.....	4.85	"	5.25
White Wrap.....	4.00	"	—
"B" Manila.....	4.90	"	6.15
No. 1 Manila....	$5.50	@	$6.90
Fiber	5.50	"	6.90
Kraft No. 2.....	5.50	"	6.90

(f.o.b. Cars, Toronto)

News per ton—			
Rolls (contract)..	46.00	"	—
Sheets	54.00	"	—

Pulp

Ground wood.....$36.50		@	—
Unbleached sulphite.	54.00	"	—
Bleached sulphite...	64.00	"	—
Kraft	47.50	"	—
Soda	58.00	"	—

Old Waste Paper

(In carload lots, f.o.b. Toronto)

Shavings—			
White Env. Cut..	2.15	@	—
Soft White.....	2.00	"	2.15
White Blk. News..	1.35	"	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	"	1.00
Light and Crumpled Book Stock.....	.80	"	.90
Ledgers and Writings	1.15	"	—
Manilas—			
New Manila Cut..	1.55	"	1.60
Printed Manilas...	.70	"	—
Kraft	1.15	"	—
News and Scrap—			
Strictly Overissue	.75	"	—
Strictly Folded ..	.70	"	—
No. 1 Mixed Paper	.60	"	—

CHICAGO

Waste Paper

(f.o.b. Chicago)

Shavings—			
No. 1 White Envelope cuttings..	2.40	@	—
No. 1 Hard White	2.23	"	—
No. 1 Soft White	2.00	"	—
Ledger and Writings	1.20	"	—
Solid Books.....	.95	"	—
Blanks	1.70	"	—
Krafts	1.00	"	—
New Kraft Cuts.....	1.60	"	—
Overissue News.....	.80	"	—
Old Newspapers—			
No. 1 Folded News	.73	"	—
No. 1 Mixed Paper	.63	"	—
Roofing Stocks—			
No. 1	1.25	@	—
No. 2	1.15	"	—